THE OIL WEEKLY

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The Oil Man's Calendar

JULY 10-17	American Institute of Mining and Metallurgical Engineers Regional Meeting, San Francisco, Calif.
AUG. 1- 6	The Eastern United States Michigan Oil & Gas Exposition, Mt. Pleasant, Michigan.
SEPT. 4- 8	American Society of Mechanical Engineers, New York.
5	Oil Workers International Union, Hammond, Ind.
11-15	American Chemical Society, Boston, Mass.
13-15	National Petroleum Association, Atlantic City, N. J.
OCT. 4- 6	American Institute of Mining & Metallurgical Engineers, Petroleum Division, Galveston, Texas.
5- 7	Texas Mid-Continent Oil & Gas Association, Houston, Texas.
9-10	American Gas Association Annual Convention, New York.
16-20	National Safety Congress, Atlantic City, N. J.
18-20	Independent Petroleum Association of America, Fort Worth, Texas.
19-20	American Institute of Mining & Metallurgical Engineers, Petroleum Division, Los Angeles.
NOV. 13-17	American Petroleum Institute, 20th Annual Meeting, Stevens Hotel, Chicago.
15-17	American Institute of Chemical Engineers, Providence, R. I.
DEC. 4- 7	American Society of Mechanical Engineers, Philadelphia.

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1. **PRESSURE-CREOSOTED PILING** is widely used for abutments and for other marine structures. It has the strength required to support great weight and is unaffected by marine borers or other destructive agents often present in lake, river and sea water.

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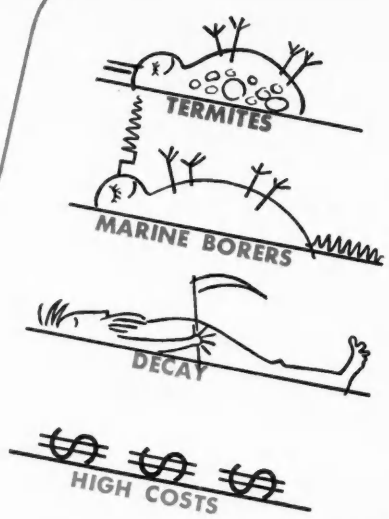
IS YOUR DEFENSE AGAINST



and gives you the advantage of

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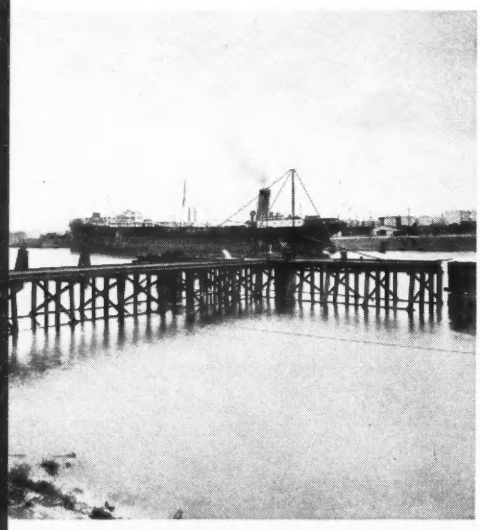
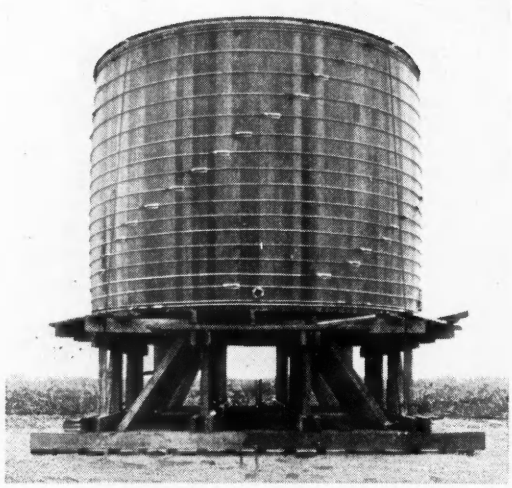
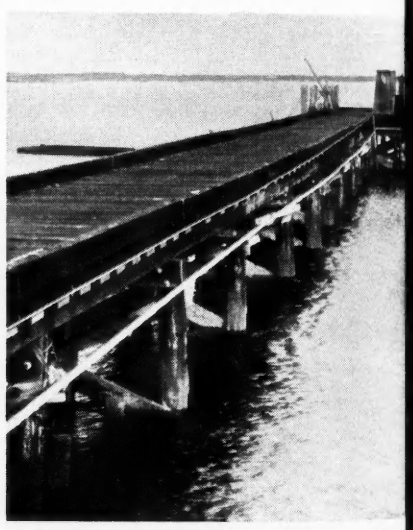


2. **LOADING DOCKS,** walks, bridges, pipe racks, wharves, warehouse floors, and other installations subjected to severe mechanical wear last longer when built of pressure-creosoted timber. Whenever desirable or necessary, the timber may be salvaged and used in other locations.



3. **WATER TANKS** and installations of a similar nature are low in first cost and give long service life when constructed of pressure-creosoted timber. The costs of painting and other maintenance operations are eliminated.



4. **PIERS** of pressure-creosoted timber withstand impact and severe weather exposures. The use of pressure-creosoted timber is saving the oil industry thousands of dollars every year by eliminating the need for frequent replacements.

OTHER USES FOR PRESSURE-TREATED TIMBER: BINS . . . SHEDS . . . FLUMES . . . WALKWAYS . . . CULVERTS . . . POLES AND POSTS . . . WAREHOUSES . . . SERVICE STATIONS . . . PIPE RACKS . . . PLATFORMS . . . TRESTLES . . . DERRICK SUB-STRUCTURES.

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This Week's Panorama

THE past week brought a toning down of the optimism that was generated recently by the general advance of the gasoline market; as various marketers declined to meet the increases of prices to dealers and to consumers, while others were obliged to rescind all or some of the lately posted advances.

Refinery prices of gasoline have remained unchanged, meanwhile; and the only change in crude prices during the past week was a local increase of 10 cents a barrel in Kent County, Michigan.

Crude Runs and Gasoline Output Continue Large

Although crude oil production is being curtailed somewhat below market demand under the relatively strict allowables of June, refinery runs of crude and gasoline production have continued around recently established all-time record levels, and normal seasonal withdrawals from gasoline storage have not been possible.

Crude oil production in the week ended June 17 was 43,950 barrels a day smaller than the average daily market demand for June, as estimated by the Bureau of Mines, having averaged 3,447,050 barrels daily. That was 70,100 barrels a day more than in the previous week, and 9.9 percent more than in the corresponding week last year, when output was under exceptionally strict curtailment.

Crude runs to stills, which had reached a new all-time peak of 3,510,000 barrels daily in the week ended June 10, were reduced 30,000 barrels to 3,480,000 daily in the week of June 17, but they were 13 percent larger than in the comparable week last year, when refinery operations, along with crude production, were controlled with unusual strictness.

Gasoline production came down along with refinery runs in the week ended June 17, having averaged 1,637,000 barrels daily, or 20,000 less than in the previous week.

But the gasoline output almost equaled current market demand, and permitted only a negligible withdrawal of 59,000 barrels from storage, instead of a substantial draft, which would have been normal for the period. On June 17 the stocks totaled 82,657,000 barrels, and were closely approaching last year's curve, after having held materially under the excessive 1938 trend earlier this year. On June 18 last year, the gasoline inventories amounted to 84,476,000 barrels.

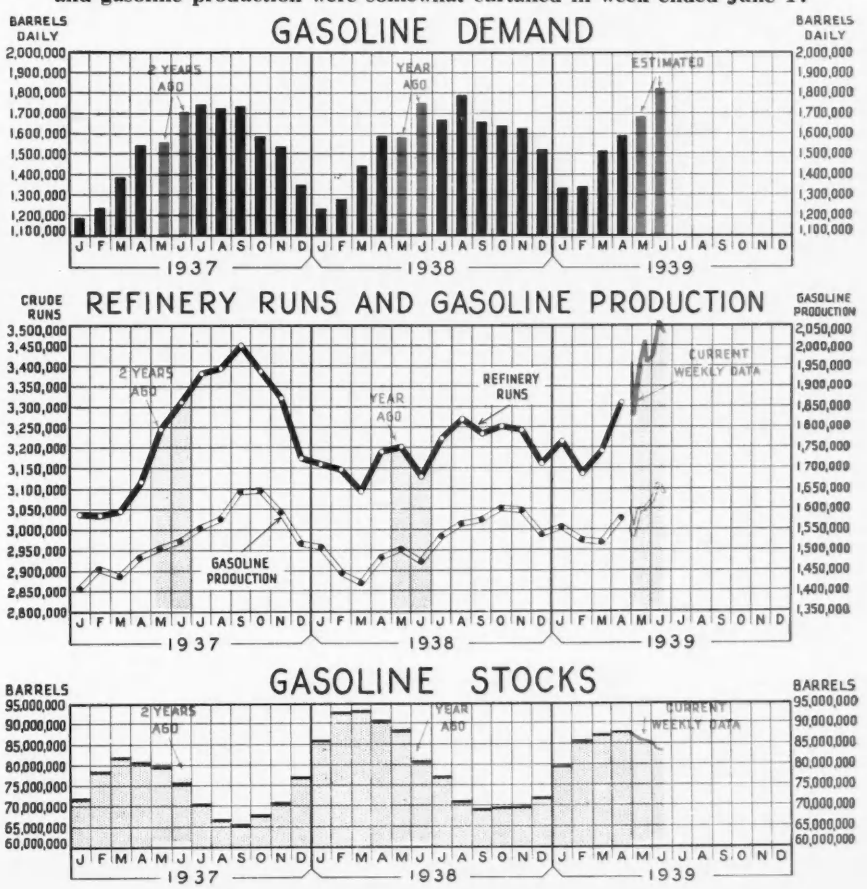
Crude Control Machinery Made Stronger Lately

The past few weeks have brought a material bolstering of crude oil production control. At Washington the House on June 20 approved a three-year extension of the Connally hot oil law, which is due to expire June 30. The bill was sent to the Senate for concurrence in a House amendment, the Senate having voted in March to permanently extend the act, which prohibits interstate shipment of oil produced in violation of state laws and regulations. Failure of the Senate to approve the 3-year limitation would send the bill to conference.

On June 19 Congress was asked to approve a two-year extension of the Interstate Oil Compact, which is due to expire September 1, and which is participated in by Texas, Oklahoma, Kansas, New Mexico,

Refinery Runs and Gasoline Production Reduced

After having reached all-time peaks in previous week, refinery runs of crude oil and gasoline production were somewhat curtailed in week ended June 17



Colorado, and Illinois. All those states except Illinois have authorized renewal of the treaty, and Michigan has been enlisted as a new member. Illinois possibly may continue membership, and California is considered a prospective member.

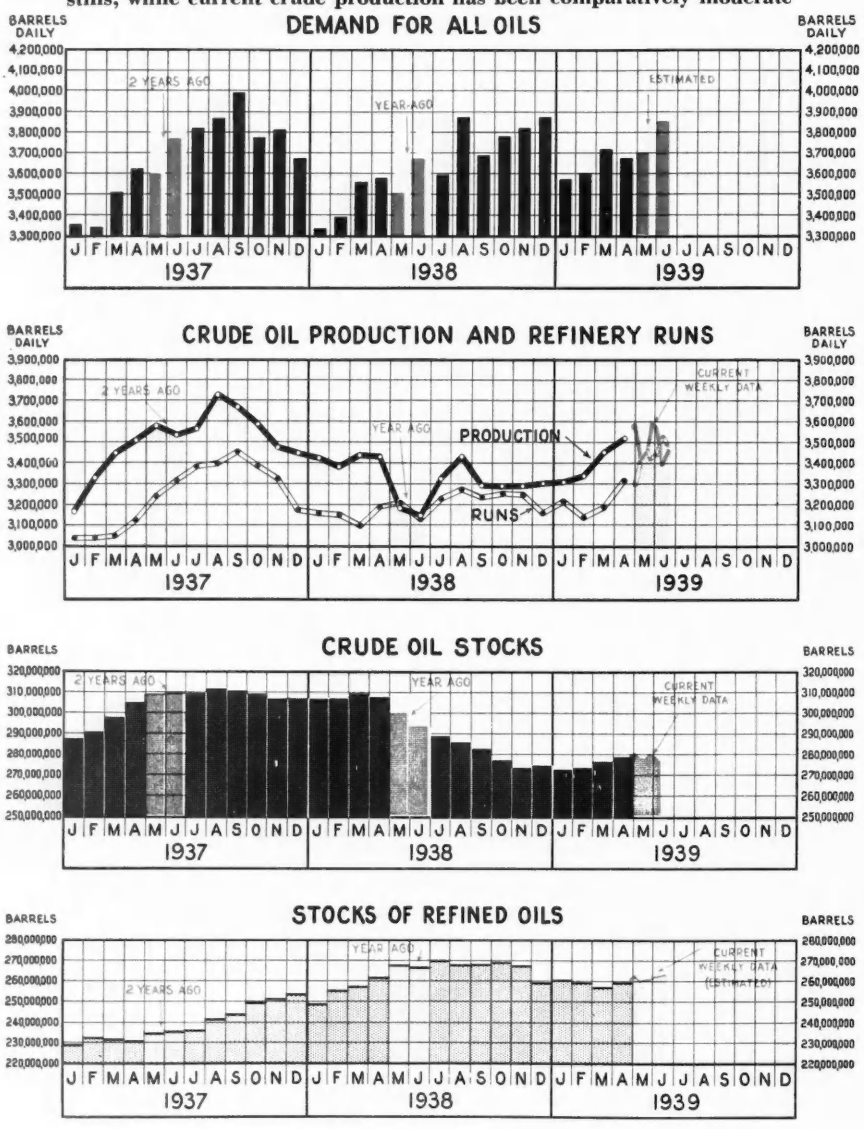
California has unexpectedly substituted state proration for voluntary curtailment by producers. The state Senate June 19 voted 27 to 10 for the Atkinson bill, which had been approved a few days before by a 44 to 28 vote of the Assembly. Assurance was given that the measure, modeled on the New Mexico conservation law, would be signed by Governor Culbert L. Olson. Some independent operators have threatened the bill with a referendum, although it was specifically endorsed by President Roosevelt, who sent a telegram to the California governor urging its passage, to enable the state "to go along with" the national administration in its oil conservation program. Opponents of the bill had charged that it was supported by large companies, who sought to avoid possible anti-monopoly prosecution under the established voluntary curtailment. Proponents had asserted that the state control was needed because a small section of the industry made voluntary proration ineffective.

Michigan was troubled with overproduction at various times within the past year, in consequence of development of the new fields of the southwestern part of the state, but lately has been placed under state proration, based on the recently enacted oil conservation law.

Illinois is the only state with important flush production that remains without state proration. It is possible, therefore, that overproduction may be confined largely within the borders of that state. Moreover, the depressed prices of crude in Illinois, affecting old as well as new fields of the state, are causing abandonment of Illinois stripper wells; and the owners of those wells, together with some operators in the new fields, are exerting pressure in favor of state proration.

Crude Oil from Storage Swells Refinery Runs

Refiners have been withdrawing crude from storage in maintaining large runs to stills, while current crude production has been comparatively moderate



Machinery Sales Indicate Active Drilling Abroad

Comparatively active drilling this year in countries outside the United States is indicated by the brisk shipments abroad of American made oil field and refinery equipment.

Such shipments were relatively large in 1938, when equipment for drilling constituted a larger proportion of all shipments than previously.

In 1939 the shipments have been running even higher.

March, 1939, brought a large increase in petroleum well and refining equipment shipments, as compared with March, 1938, according to the Bureau of Foreign and Domestic Commerce of the Department of Commerce.

Foremost Illinois Field Is Nearly Half Drilled

Salem, the top ranking field in Illinois, ultimately due to cover 10,000 acres, apparently is approximately one-half drilled up, as the drilling campaign there shifts appreciably from the Bethel sand to the McClosky lime, deepest of the three producing formations. (In May, 50 wells were completed in the McClosky, 44 in the Bethel, and 5 in the Aux Vases sand.)

The field at the end of May had 944 producing wells, which included 731 in the Bethel sand, 181 in the McClosky lime, 24 in the Aux Vases sand, and 8 producing from both the Bethel and Aux Vases sands.

It is indicated that at least 1100 wells will be drilled to the Bethel sand, and that 1000 to 1100 may be completed in the McClosky lime. Inasmuch as a few wells are producing from both the Bethel and Aux Vases sands, the latter may get the major part of its development through the deepening of Bethel sand wells at a later time.

Gasoline Stocks Materially Above Requirements

By L. J. LOGAN, Associate Editor

INFORMATION and estimates presented herewith indicate that gasoline inventories in the United States currently are around 10,000,000 barrels, or about 14 percent, above actual operating requirements; and that the stocks are in danger of being similarly above the minimum economic level at the end of this summer.

Several careful estimates have been made as to what amount of gasoline actually would be needed on September 30 for normal and efficient functioning of the industry, and these estimates have ranged from 61,000,000 to 65,000,000 barrels.

Colonel Ernest O. Thompson, chairman of the Interstate Oil Compact Commission and member of the Texas Railroad Commission, recently, expressed the opinion that 65,000,000 barrels of gasoline would be adequate on entering the fall-winter season of lighter consumption on October 1. He used that figure in appealing to producers and refiners to curb their stocks of crude oil and gasoline. "It strikes me," said he, "that the time to reduce excessive stocks above ground, both in gasoline and crude oil, is during the heavy consuming season. If this is done, it will mean that the industry can have uninterrupted operations throughout the winter of 1939-1940."

The committee on supply and demand of the Independent Petroleum Association of America recently issued its comprehensive forecast for the quarter ending September 30, and in it recommended that withdrawals from gasoline stocks should be continued until the inventories reach a level of 62,000,000 barrels. "In order to avoid entering the fall season of reduced demand with wasteful gasoline inventories," stated the report, "it is believed to be in the best interests of sound conservation that these inventories do not exceed this level on September 30."

In its last previous report, March 15, this committee recommended that total gasoline stocks be reduced at least to 70,000,000 barrels by June 30. But it now appears unlikely that the inventories will be much, if any, below 80,000,000 barrels on June 30; as they stood at 82,716,000 barrels on June 10 and declined only to 82,657,000 barrels by June 17. These figures indicate that the gasoline stocks currently are about 10,000,000 barrels larger than necessary.

Conforming closely with the estimates given above is that of Fred Van Covern, director of statistics of the American Petroleum Institute, whose opinion has been solicited. He indicated that he regarded an inventory of 61,000,000 barrels on September 30 of this year as economically desirable.

Further, he has furnished copies of a chart and a table that he uses in watching the trend of gasoline inventories, crude runs to stills, and crude oil inventories. Both the chart and the table are reproduced herewith, several labels and notations have been lettered in on the chart by THE OIL WEEKLY, in an

Trends of Finished and Unfinished Gasoline Inventories

These are figures on which the accompanying chart is based. First column of inventories is basis for top curve of chart, second column for second complete curve from top, and so forth. Last column is current curve, appearing in red zone.

(Barrels)

DATE		Actual Trend in Spring and Summer of 1938 (Bureau of Mines Basis)	Trend from Actual of March 31, 1939, to Actual of September 30, 1938 (69,086,000)	Trend from Actual of March 31, 1939 to Minimum Economic Desirable of September 30, 1939 (61,000,000)	Trend from Minimum Economic Desirable of March 31, 1939 (61,000,000)	Actual Trend in Spring and Summer of 1939 (Estimated on Bureau of Mines Basis)
March	31	92,320,000	87,277,000	87,277,000	80,000,000	87,277,000
April	8	91,717,000	86,950,000	86,750,000	79,700,000	86,613,000
	15	91,189,000	86,600,000	86,350,000	79,350,000	87,071,000
	22	90,662,000	86,250,000	85,800,000	78,800,000	87,769,000
	29	90,134,000	85,750,000	85,200,000	78,250,000	86,794,000
April	30	90,059,000	85,636,000	84,971,000	78,050,000	86,629,000
May	6	89,689,000	85,350,000	84,400,000	77,550,000	86,216,000
	13	89,257,000	84,700,000	83,600,000	76,800,000	84,808,000
	20	88,825,000	84,000,000	82,750,000	76,000,000	84,544,000
	27	88,394,000	83,400,000	81,900,000	75,200,000	84,152,000
May	31	88,147,000	82,793,000	81,186,000	74,593,000	83,784,000
June	3	87,385,000	82,550,000	80,900,000	74,350,000	83,637,000
	10	85,608,000	81,700,000	79,750,000	73,350,000	82,716,000
	17	83,831,000	80,800,000	78,700,000	72,250,000	82,657,000
	24	82,054,000	79,950,000	77,600,000	71,200,000	.....
June	30	80,531,000	78,950,000	75,450,000	71,000,000	.....
July	1	80,408,000	78,950,000	75,450,000	71,000,000	.....
	8	79,550,000	77,900,000	75,200,000	68,950,000	.....
	15	78,693,000	76,900,000	73,800,000	67,900,000	.....
	22	77,835,000	75,850,000	72,350,000	66,900,000	.....
	29	76,977,000	74,750,000	70,950,000	66,000,000	.....
July	31	76,732,000	74,364,000	70,371,000	65,657,000	.....
August	5	75,801,000	73,850,000	69,600,000	65,200,000	.....
	12	74,498,000	72,900,000	68,200,000	64,400,000	.....
	19	73,196,000	72,050,000	66,850,000	63,600,000	.....
	26	71,893,000	71,250,000	65,750,000	62,900,000	.....
August	31	70,962,000	70,779,000	64,764,000	62,386,000	.....
September	2	70,837,000	70,700,000	64,600,000	62,300,000	.....
	9	70,399,000	70,200,000	63,650,000	61,900,000	.....
	16	69,961,000	69,750,000	62,700,000	61,500,000	.....
	23	69,524,000	69,350,000	61,800,000	61,200,000	.....
	30	69,086,000	69,086,000	61,000,000	61,000,000	.....

effort to make it as self-explanatory as possible.

The table presents in detail the figures on which the chart is based, the first column of the table representing the top curve of the chart, the second column the second April - September curve from the top, and so forth; and the final column showing the details of the actual trend of gasoline inventories since the beginning of spring.

The fourth column of the table and bottom curve of the chart indicate Van Covern's conception of minimum economic working levels of gasoline stocks not only at the beginning of the spring - summer season this year and at the end, but also the trend during the season. In his opinion, the stocks would have been adequate at 80,000,000 barrels on April 1, and they would be similarly sufficient at 61,000,000 barrels on September 30. Normal withdawals between those levels would have resulted, according to the table, in a supply of 72,250,000 barrels on June 17, whereas the actual quantity on hand then, as reported by the American Petroleum Institute last week, was 82,657,000 barrels.

Thus the Van Covern data, like the figures of the committee of the IPAA, indicate that the gasoline inventories currently are around 10,000,000 barrels, or about 14 percent, above minimum economic requirements.

The top line of the chart shows the actual trend of finished and unfinished gasoline inventories, by weeks, in the spring and summer of 1938—a trend that proved obviously too high, as attested by the greatly disturbed and depressed condition of the gasoline market in 1938 and early 1939. The stocks stood at 92,320,000 barrels on March 31, 1938, and were reduced to 69,086,000 barrels on September 30, 1938.

So far this year, the gasoline inventories have been held below last year's trend, as shown on the chart. But in the week ended June 17 they almost equaled the level of the corresponding date last year; and it appears quite possible that the 1939 curve may shortly surmount that of 1938.

Beneath the top line is one running from about 87,277,000 barrels, the level of actual gasoline stocks on March 31, this year, to 69,086,000 barrels, a hypothetical level as of September 30, this year, which is the same as that actually reached on September 30 of 1938.

Between these two top lines of the chart is a zone, shown in red, which Van Covern has described as a danger zone for this year's gasoline inventory trend to be in. As long as the trend remains within that red zone, he explained, there is danger that the gasoline inventory situation as of the end of this summer will be no better, or possibly worse, than at the end of last summer; that there may be as much gasoline in storage on September 30, 1939, as on September 30, 1938, if not more.

The third trans-chart line from the top extends from the 87,277,000-barrel actual level of stocks as of March 31 this year to 61,000,000 barrels on September 30 this year, which is the level that Van Covern regards as economically desirable.

Between this third line and the one immediately above it is a white zone. Should the current trend line move into the white zone, Van Covern explained, that would show, for the moment at least, a trend toward an improved position as of September 30 of this year, in comparison with that occupied at the end of September last year; and one which might even be considerably better than that last year, in the event that the trend went deeply enough into the white zone.

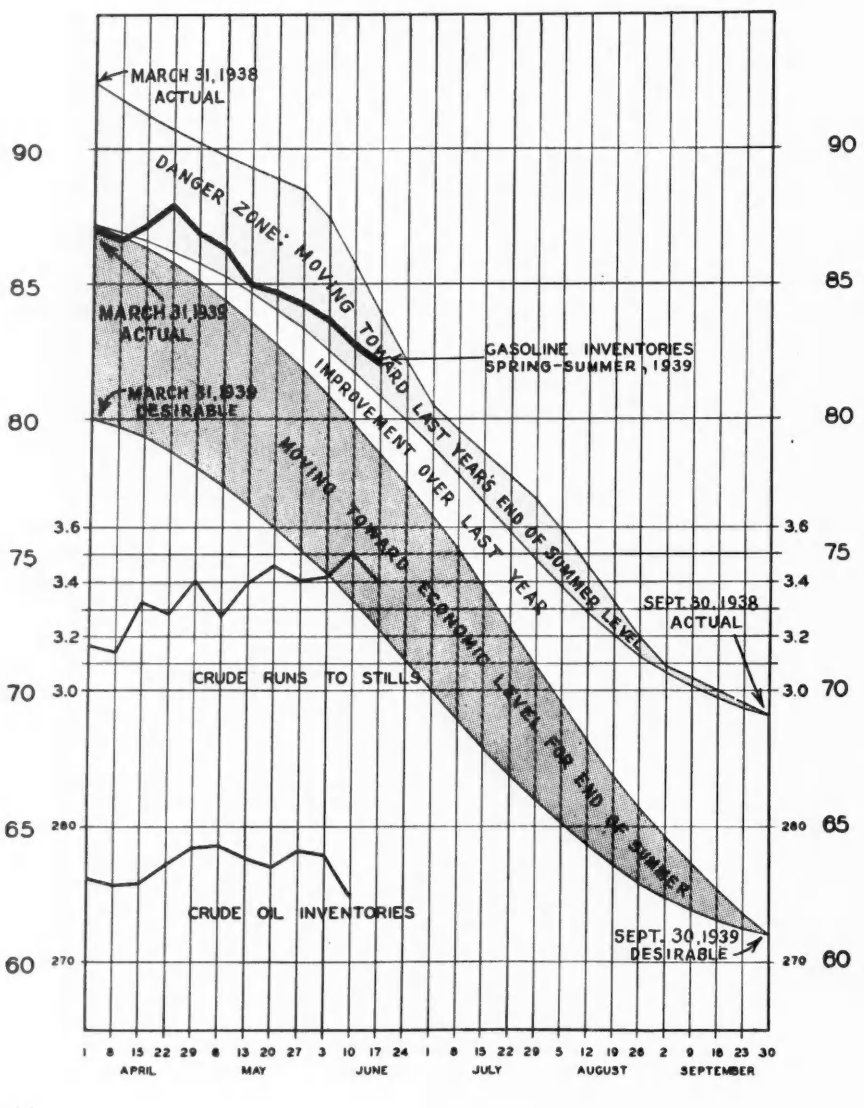
Finally, at the bottom, is the line running from 80,000,000 barrels, which would have been the economically desirable minimum of gasoline stocks at the end of March of this year, to 61,000,000 barrels, the indicated economic level as of September 30 this year. And between this bottom line and the one just above it is a gray zone. Should the current trend move into the gray zone, Van Covern stated, one might feel, for the moment at least, that real improvement was indicated, and that the inventories might be moving toward an ultimate September 30, 1939, position approximating the minimum economic level.

Shown on the chart, in addition to the trend of gasoline stocks, are the current trend of crude runs to stills and the current trend of crude oil inventories. These related curves make it possible to determine, from the gasoline inventory trend, whether or not runs to stills are too high; and from the crude stocks trend, whether large runs have resulted from heavy withdrawals from crude oil storage or from the alternative cause, large current production of crude.

GASOLINE INVENTORIES, CRUDE RUNS TO STILLS AND CRUDE OIL INVENTORIES

WEEKLY APRIL 1 - SEPTEMBER 30, 1939

IN MILLIONS OF BARRELS



Application of Radial Flow Calculations to Gas Recycling Problems

By LAURANCE S. REID, Black, Sivalls and Bryson, Inc.

THE return of dry residue gas to the producing formation is one of the most important phases of the general problem of processing and recycling the reservoir fluid from a gas-distillate pool. Except for the fact that injection wells are the means by which reservoir pressures are maintained and are responsible for increased ultimate yields from both high pressure oil and distillate-bearing formations, it must be admitted that such wells are usually considered in the category of "necessary evils." For this reason, the ratio of producing wells to injection wells ranges from two to four, and these injection wells are usually operated at maximum input capacity, as dictated by the economics of compressor operation.

Obviously, the injection well, (or wells) is the "bottleneck" in any gas recycling project and must, therefore, be carefully considered and evaluated in order that satisfactory operations may be maintained. While experimental determinations of injection well characteristics have been made in a few scattered instances, the cost of such work usually is prohibitive. Furthermore, experience indicates that these injection characteristics may be calculated within a reasonable degree of accuracy.

The Use of Casinghead Pressure Data

Muskat[1] has shown how the productivity of a formation can be calculated through the analysis of the rate of pressure rise in a well which has been shut-in for a certain period of time. The analysis is based on the hypothesis that the rate of production (Q) is proportional to the difference between the static and flowing bottom hole pressures. The proportionality constant (c) depends upon the dimensions of the system (sand thickness, well radius, external or drainage radius) and upon the permeability of the formation. These relationships have been expressed by Muskat[1] as follows:

$Q = C(p_e - p)$, where p_e = reservoir pressure
and p = flowing bottom hole pressure

(For radial flow) $$C = \frac{2\pi kb}{\mu \log_e\left(\frac{r_e}{r_w}\right)}$$

Where k = permeability in Darcys, (b) its thickness in centimeters, μ the viscosity of the fluid in centipoises, (r_w) the well radius and (r_e) the external radius at which the pressure is (p_e) under flowing conditions. The above analysis may be used in the study of the flow of fluids from both crude oil and distillate reservoirs. The productive capacity of a distillate well can be gauged by its performance under several moderate flowing rates without subjecting the well to the danger of water coning from

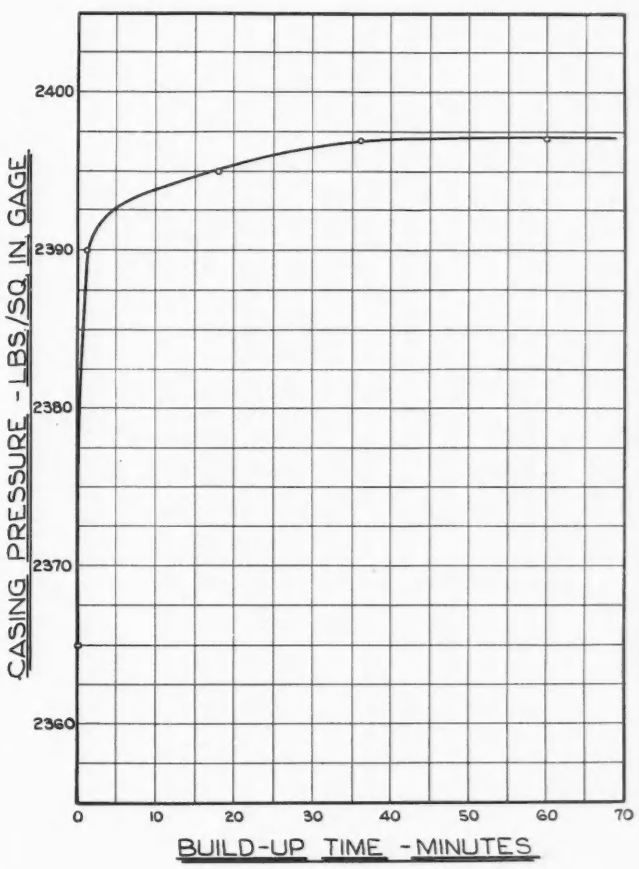


FIGURE 1
Casinghead build-up on a well producing from a sand formation.

[1] M. Muskat, "The Flow of Homogenous Fluids Through Porous Media," McGraw-Hill Book Company, Inc., 1937.

excessive rates of production. On many occasions it is not possible to secure bottom hole pressure data; however, the rate of pressure rise at the casinghead readily can be obtained by simply shutting in the well. Such data on a two phase reservoir would not give one a true idea of the build-up in the reservoir itself, but with the gaseous single phase formation a fairly close estimate can be obtained by making a correction for the change in the static pressure head exerted by this column of fluid in the casing between flowing and shut-in conditions. For example the hydrostatic head exerted by a column of gas in a well 8000 feet deep, having a surface pressure of 3500 pounds per square inch gage, and average temperature of 125°F. and a molecular weight of 25, with a deviation factor of 0.8, would be calculated as follows:

$$(1)\quad \int V\,dP = \text{feet of fluid}$$

Since $\frac{RT}{P}=V$, substitution of $\frac{RT}{P}$ into equation (1) gives

$$(2)\quad \int \frac{RT}{P}\,dP = 8000 \text{ feet}$$

Integrating (2)

$$(3)\quad RT \ln_e\left(\frac{P_1}{P_2}\right)=8000$$

Substituting the above data into (3)

$$\frac{1544}{25/.8}(460+125)\ \ln_e \frac{P_1}{3514.7}=8000$$

$$29000\ (2.3)\ \log_{10}\frac{P_1}{3514.7}=8000$$

$$\log_{10} P_1=\frac{8000}{66500}+\log_{10}\ 3514.7$$

$$\log_{10} P_1=.12+3.545$$

P_1=4625 pounds per square inch absolute
or 4610.3 pounds per square inch gage.

With Casinghead Gas

If the well were flowing gas with a casinghead pressure of 3000 pounds per square inch gage, the bottom hole pressure (neglecting friction in the casing) would be:

$$\log_{10} P_1=.12+\log_{10}\ 3014.7$$

P_1=3970 pounds per square inch absolute

In other words the hydrostatic head of the gas column would be lowered from (4625-3514.7)=1110.3 pounds per square inch down to (3970.-3014.7) = 955.3 pounds per square inch as the result of the lower pressures existing under flowing conditions.

The Permeability of the Formation

In view of the relatively small change in the hydrostatic head of the gas column between shut-in and flowing conditions, it is believed that build-up curves can be used satisfactorily in estimating the pressure required for the injection of gas back into the reservoir. The pressure rise at a casinghead is shown in Figure 1 for a well which had been producing from a sand formation at the rate of 6.6 million standard cubic feet per day, and in Figure 2, a well in a limestone reservoir producing 10,000,000 standard cubic feet. The following calculations show that the sandstone formation has a permeability of 2.09 Darcys whereas the limestone has only .065 Darcys.

From Muskat[1], the permeability of a radial flow of gas through a formation is:

$$K=\frac{\overline{Q}\mu \ln_e\left(\frac{r_e}{r_w}\right)}{h\,\rho\,(\Delta P)^2\,\pi}$$

Where
K = Permeability (Darcys)
Q = c.c. of production per second at avg. pressure
μ = viscosity (centipoises)
r_e = radius of drainage
r_w = radius of well
h = thickness of formation in cm.
ρ = density in grans per c.c.
ΔP = Pressure drop in atmospheres

Sand Reservoir

$P_{avg} = 2381$

$$R=\frac{2381}{14.7}\times\frac{520}{580}\times\frac{1}{.89}=163$$

Where R = ratio in standard cubic feet to actual cubic feet in reservoir.
.89 = compressibility factor
.000675 = gm. per c.c. (standard conditions)
ρ_r or Density in Reservoir = 163×.000675 = .11 gm/c.c.

$$Q=\frac{6{,}600{,}000\times 28{,}317}{163\times 24\times 3600}=13{,}200 \text{ c.c. per second}$$

Thickness h = 13′ = 396 cm.
ΔP = 2397 — 2365 = 32 pounds = 2.18 atm
$(\Delta P)^2$ = 4.73

$$K=\frac{13{,}200\times .0327}{396\times .11\times 4.73}=2.09 \text{ Darcys}$$

Limestone Reservoir

P_{avg} = 1935 pounds

$$R=\frac{1935}{14.7}\times\frac{520}{580}\times\frac{1}{.89}=133$$

$\rho_r = 133\times .000675 = .09$ gm. per c.c.

$$Q=\frac{10{,}000{,}000\times 28{,}317}{133\times 24\times 3600}=24{,}700 \text{ c.c. per sec.}$$

h = 116′ = 3540 cm.
ΔP = 2080 — 1790 = 290 pounds = 19.7 atm.
$(\Delta P)^2$ = 389

$$K=\frac{24{,}700\times .012\times 8.55}{3540\times .09\times 389\times \pi}=.0652 \text{ Darcys.}$$

In making these calculations it is necessary to assume a radius of drainage, which was arbitrarily chosen as 3000 feet in each case. Since the permeability is proportional to the logarithm of the ratio of the radius of drainage to the radius of the well, it is easily seen that the assumption of a 2000-foot radius would reduce the permeability only 5.2 percent and a 4000-foot radius would increase it only 3.9 percent. The laboratory analysis of cores from a formation is desirable. However, calculated results from casinghead build-up data may actually prove to be more reliable in the event the formation contains a number

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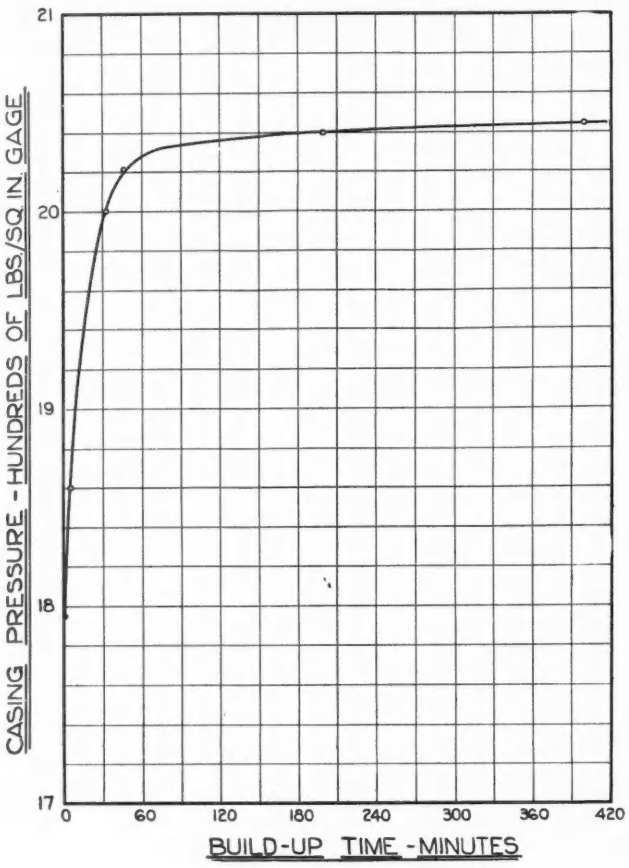


FIGURE 2
Casinghead build-up on a well in a limestone reservoir.

of streaks of varying degrees of permeability, or is known to be very highly permeable.

Pressure Differentials Between Input and Output Wells

In any reservoir which is being depleted gradually the pressure gradients throughout the reservoir are constantly changing. When the field is young the radius of drainage is usually small, but as the pressure falls in the formation the drainage radii reach out from each well until they overlap, after which the remotest portions of the reservoir fall below the original bottom hole pressure. In distillate fields the percentage of shrinkage in volume is so small as the result of condensate production that the return of gas tends to set up a steady state of flow. If the distance between input and output wells is to be 6000 feet, it is reasonable to assume that the pressure difference in the formation between the two wells will be approximately twice as great as the pressure drop which occurred over the 3000-foot radius. In the event 6.6 million standard cubic feet of gas are returned to the sand formation, previously discussed, the pressure differential will be $32 \times 2 = 64$ pounds per square inch. The pressure gradient from any one input well to the nearest output would show a sharp drop near the input, followed by a levelling off over the bulk of the reservoir and another sharp dip in pressure near the output well. Should it be decided that 13.2 million cubic feet be returned to the same reservoir and an equal amount produced, the pressure differential would be multiplied by the square root of 2, since the radial flow is proportional to the square of the pressure drop.

Dilution of Distillate Bearing Gas

Wide spacing between the input and output wells will be desirable so as to minimize the early mixing of dry gas and wet gas. There are very little field or experimental data available to make reasonably accurate calculations possible on the degree to which the dry and wet gases will diffuse into each other even in homogeneous formations. Other complications, such as the opening of channels through fissures and more permeable sand streaks, will affect many gas recycling operations adversely and result in their early abandonment.

Well Patterns—Location of Injection Wells

In the absence of a unit operation agreement, any gas injection plan will be a difficult one to perfect. There are several different types of well patterns for gas recycling, but the major ones involve the line drive, the five spot, and the seven spot plans. For a reservoir, indefinite in extent, the five spot pattern requires the same number of input and output well. But for the seven spot, the number of input to output wells is 2 to 1 or vice versa, depending upon convergent or divergent flow.

Injection of dry residue gas is now being carried out both on the flanks and on top of the structure in the various recycling projects in operation. In comparing the merits of these two methods, the general concensus of opinion indicates that injection on top of the structure is likely to be least hazardous because, by this means, the injection zone is furthest removed from proximity to the water table. Obviously, greatly impaired injection characteristics would result from a well completed so that water is present in the vicinity of the well bore, due to the severe reduction in the effective permeability of the formation. Other than this point, there is little to choose between the two methods. A comparative study of the specific gravity of wet and dry gas indicates that gravitational effects will play a very minor part in the mechanics of gas diffusion and dilution in the majority of reservoirs, although this effect will be of greater importance in high distillate content production such as is found in the Big Lake and Cotton Valley pools. In view of the fact that the ratio of producing to injection wells usually ranges from 2 to 4, great care should be exercised in selecting input well locations. In general, it may be said that the selection of well spacing patterns will depend upon structural characteristics and/or off-set production, and that the satisfactory solution to the problem presented by various pools will likely result in a variety of patterns.

Unfortunately, the practice of gas recycling has been so recently developed that the superiority of one spacing pattern over another has not been established by actual operation, as has been the case in water-flooding.

Light Pumping Foundations Frequent Source of Trouble

Pumping Series Article No. 11

A few shutdowns and resulting losses in production will pay for a lot of foundation work.

* * *

Logical solution is not costly repairs but building of proper foundations in the first place.

By FRANK B. TAYLOR, Staff Writer

FOUNDATIONS for lightweight field equipment are too often the cause of trouble and lost production. Difficulties experienced generally tie up production until repairs are complete, and the same difficulty may reassert itself at a later date. Maintenance of foundations is a field expense always kept as low as possible by reason of their nature, and often because the general office fails to see what could damage a solid concrete foundation. The result is that repairs are too frequently inadequate. The solution is not in complete and costly repairs, but in building a foundation in the first place to satisfy both conditions of operation, and of equipment.

There are, in general, two major types of field foundations necessary to production other than the massive foundations used with unit pumpers or lifts exceeding six or seven horsepower, the latter class not being considered in this article. In the lighter class, foundations for jacks and the single well pumpers of small power form the two major types. Other field equipment of similar service are hold-downs, swings, etc., each usually presenting specific foundation problems individual with each installation.

It seems to be the opinion of many field production men that not sufficient attention is given the matter of foundations. Hundreds of bad ones apparently prove the point. It is no more logical or economically desirable to skimp either on foundation material or labor than it is to skimp on any other piece of production equipment. And a very little downtime will pay for a lot of foundation work.

Problems Vary

Problems confronting a field man installing a jack or unit pump may vary considerably from well to well. In one case it may be necessary to set the jack on a filled cellar, or in other cases the completed job must leave the cellar or a part of it open. Fills, as one problem, are tricky. Where strata near the surface carry moisture there is always a chance that a tight fill will weaken. In swampy sections, this question is paramount regardless of near-surface conditions. Operators use a variety of methods to overcome this danger, one being to fix vertical lengths of old casing or pipe into the cellar prior to filling. Large, irregular rock and junk aid in making a fill stable. Watering-in as the fill is made, and packing with a tractor, are devices used to insure a good bed for foundations.

It is desirable to allow any fill to thoroughly settle before putting in foundation work. If it appears that there is a question as to stability of a fill, reinforcing can be driven into the pack at various angles, and allowed to protrude from the earth into the excavation for the foundation. This will aid greatly in stabilizing an otherwise weak job by adding bearing depth to the concrete. In cases where a unit or jack has been placed, and found insecure through a weak fill, some operators have over-

come the trouble by casing a small hole into the fill proper and pumping concrete under pressure into the casing. This is an expensive operation and is no guarantee against further trouble.

Most recommendations call for a mat around the foundation, and this is particularly desirable where a fill is present. A six or eight inch mat is usually sufficient, being set to a distance of eighteen inches from the heavier section of the foundation. Reinforcing is irregularly angled from the mat into the foundation form, making the two sections integral. A good foundation is dependent largely on the judgment of the man supervising the installation and his knowledge of earth conditions.

When the cellar must be left open, jacks can be installed on casing rising from the cellar, cross-beamed, and at times anchored on the surface. Installations of this nature are being used in Kansas with very little difficulty being experienced. One danger to watch is that the lower ends of the risers are established firmly, as pumping vibrations on a heavy well can produce a vertical play of the polish rod.

Surface Differs

Surface earths vary greatly in their ability to support a load. Some soils are ideal for foundation work, where others require more consideration. Bearing capacity varies from a usual low of around 1000 pounds per square foot to five thousand. Unconsolidated alluvial soil is rated at about 800 to 1000 pounds per square foot bearing capacity; soft clay, between 2000 and 3000 pounds, depending upon its solidity and water content, and clean dry sand has a bearing capacity around 4000 pounds per square foot. These constants must be taken into consideration as well as the expected polish rod load, and the foundation calculated accordingly. One firm installs its jacks on the basis of a concrete volume equal to at least two-thirds the weight of the well pumping.

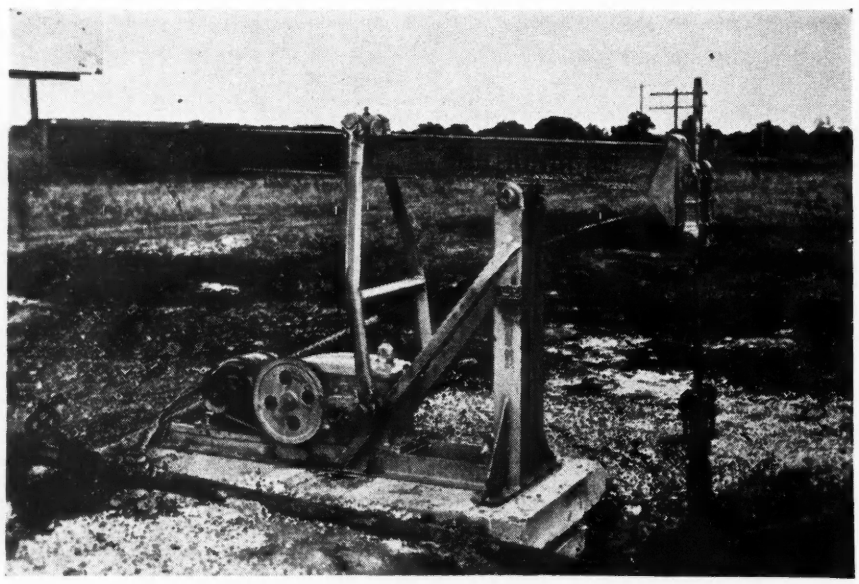
One installation made over a fill, with the earth not consolidated, caused immediate difficulty and has been replaced. The fill was made to the surface, the top wet and packed by running a tractor over it. The material used on top of the fill failed to pack. Orders were for a customary foundation, without regard to the condition present.

The jack was to lift about 1050 barrels of fluid per day, and to operate a 2¾-inch plunger through 3-inch upset tubing at between 24 and 28 strokes per minute. Each stroke was 74 inches. Of the total fluid, 75 percent was expected to be water. This gave a polish rod load of about 23,000 pounds. The foundation ordered was without mat, although the man in the field, noting the conditions, did put in a small mat. Ten yards of slurry and four yards of rock were used but the jack loosened within a week. Instead of a replacement, the operator attempted to strengthen the foundation. This was no more successful and after the unit broke free the second time, a new and heavier foundation was put in, complete with full 18-inch mat to compensate for the condition of the fill. This job was far more expensive than the original, even without taking into consideration the attempted repair or the production lost through down time. It is usually true that any foundation repair that results in a stable unit requires more yardage of material than the original installation.

The consideration of the type jack to be used on a pumper, and from which direction it pulls, is important in foundation work. Jacks for heavy-duty service pulling from the head end, put stress on the tail end. To compensate for this the foundation should be heavy in the tail, with more weight and surface support than is placed under the nose. A heavy tail will keep down bearing pressure on the front pads. Where maximum pulls and exerted stress is at the nose or under the forward section of the jack expensive pads as well as a heavy tail is desirable.

Foundations for light weight jacks used in shallow areas, and in upper Mid-Continent secondary recovery projects, are usually very limited as to volume. However, the lift is generally from 600 feet or less and with volumes of fluid under 20 barrels per day the support of the jack or unit pump is given a minimum of impact stress per stroke. For this reason the usual foundation is roughed out in square form, with pads or mat only where local earth conditions are dangerous even to light installations.

In some Kansas districts where pumping potentials are obtained with jacks special precautions must be observed. Here, polish rod loads of 30,000 pounds have been measured lifting from 3800 to 4300 feet. Fifty four inch strokes are the upper limit, with as high as 45 or 46 strokes per minute. This speed greatly increases the power necessary on the down thrust of the rod string, and instead



A light pumper on concrete foundation in the shallow area of southeast Kansas, 6 miles east of Moran, where waterflooding is under way. There the custom is to unitize the light powers on a single foundation.

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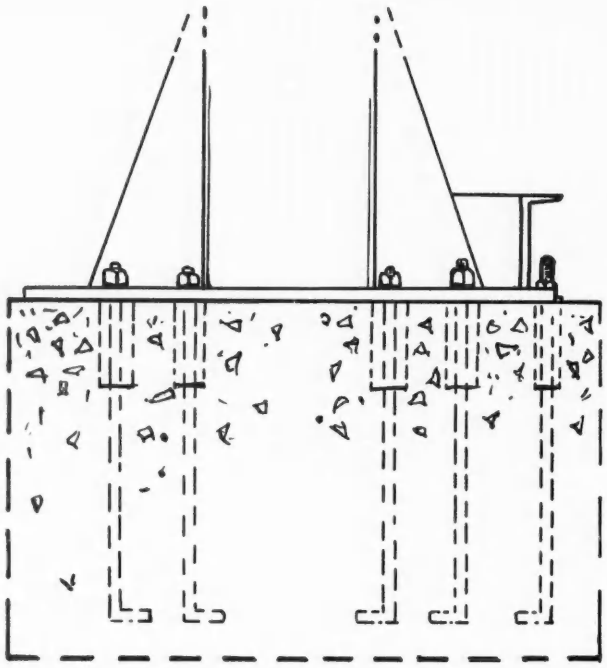


Lining up anchor bolts and hooking them deep into foundations is necessary in both light and heavy installations of pumping equipment.

of dropping into the hole, the rods are in some cases powered into the well as the normal downward drop is less than the downward speed of the jack. This action and delivery of power on the down thrust place unusual strain on the forward end of the jack, lifting the unit off the front pads. To counteract this operators give special attention to securing the forward end of jacks used in potential tests.

Whenever possible it is advisable to make installations on solid earth rather than fills. This is equally true in all areas and with either jacks or small powers. Weighing of the foundation for jacks is degreed upon the weight of the well, and to counteract the stress points.

Experience has developed some important facts in relation to angle of pull rod power delivery. If a pull rod works horizontally, which should be at right angle to the vertical stroke of the polish rod, stresses are comparatively well equalized. However, if the pull rod works either down toward the jack or up from a lower level, the stresses are not very well distributed and dangers to the foundation are increased. A normal pull is to be desired whenever practical.

Many operators using light jacks or very low horsepower pumpers mount their equipment on timbers rather than upon a concrete foundation. Two beams are used, their size and length being dependent upon the base dimensions and weight of the unit. These mounts are portable and when removed from a location the foundation is not necessarily charged off as a loss. Although not as rigid as more solid foundations, they adequately serve certain purposes. Fir timber, or oak if desired, is good material. Fir may check more than other timbers but stands up well in mud and water. Usually the more oil on it the better. Asphalt can be applied as a preservative where the timber is unduly attacked. The weight of fir timber varies only slightly and may be calculated by using an average factor of 3.5 pounds per board-foot. Pine is slightly heavier.

Some general points are well worth considering in foundation construction. Large anchor bolts are desirable. No little experience has been had in the fields with small bolts rusting off where they leave the concrete. The load must be fixed at the legs where maximum stress occurs rather than just any place where the bolt holes are readily located. The bolts should be long and hooked as deeply as possible into the concrete. A unit should be grouted in carefully if a good seating is not otherwise obtainable. One firm customarily seats the jack on concrete that is still slightly green and beds it down by tightening on the anchor bolts.

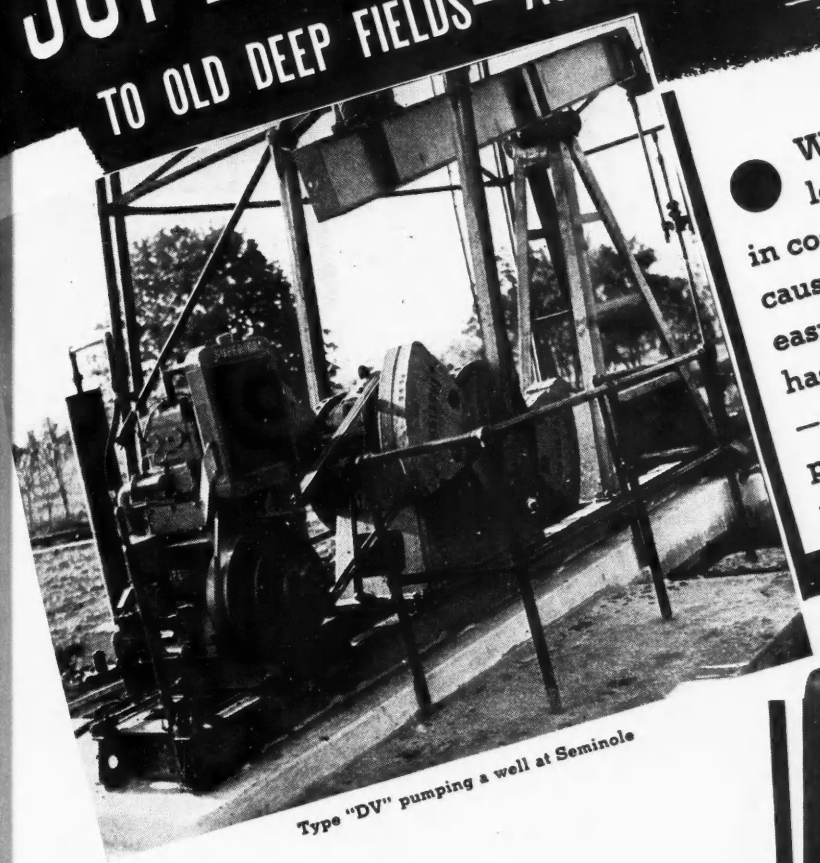
Rock on the lease may or may not be suited to foundations. If the lease rock is soft, porous or shaly, it is probably not suited. Shale will fracture, with the mix only adhering to surface layers on one side and to the exposed cross-section on the other. An absorbent rock will rob the water from the mix, thus weakening the cured concrete. Hard, sharp, nonporous, angular material is best. Sucker rod and similar lease material is suited for use as reinforcing. Foundations should be given drainage, which is done more readily by ditching the green foundation than by cutting channels out of the hardened material.

Costs Vary

Costs of foundations vary in all fields, with a price spread extending from as low as $10 per yard to as high as $22. Costs do not include reinforcing; usually available. An average cost in fields removed from ready-mix distribution figures around $16 or $17 per yard, approximating the cost in East Texas. Jacks vary in their requirements with the average taking around five yards, although some of the smaller ones get by with not more than two yards of material. Calculations to determine the weight of cured concrete usually are based on the per foot volume with 150 pounds per cubic foot being the factor. This makes a cubic yard weigh 4050 pounds, with around 4000 pounds being close enough for any normal determination.

Foundations other than those supporting jacks and small unit pumpers are numerous in lease pumping installations with hold-downs, underpulls and swings holding the majority. Foundations for this type of equipment depend upon local requirements. No set rule can be established in view of variety of types and of application. The old method of installing this class of equipment was to pour plenty of concrete and rock into as big a hole as seemed required. If this didn't do the job, more concrete was added until it couldn't help but hold. Newer methods take the direction of stress and pull more into consideration and lay the foundation with as much area exposed as bearing surface in the direction of power as is practical. As a consequence, there are less swings working tons of concrete on a pivot, and fewer of the smaller foundations working with each power delivery.

Many SUPERIOR TYPE "DV"s ARE GOING TO OLD DEEP FIELDS—AS WELL AS ON NEW SHALLOW PRODUCTION



Type "DV" pumping a well at Seminole

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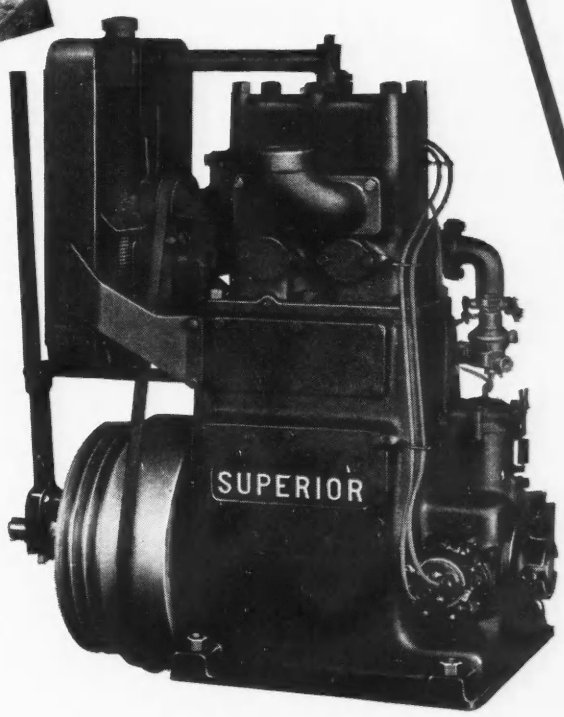

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Monopoly and Production In Texas Oil Fields

By ALEXANDER B. MORRIS, Consulting Engineer

WITH the United States government conducting investigations into the monopolistic aspects of various industries, and with the memory of the Madison disaster fresh in the oil industry, it is not out of place to review our own situation in this respect, for in these days no one is really safe from the inquisitive finger of authority, whether federal or state.

Who produces the oil of Texas? Literally thousands of separate operating concerns, individuals, partnerships and corporations. It is a relatively simple matter to determine just what any one company has in East Texas, but considerable labor is involved in making a take-off from the railroad commission's sheets for any one company or group of companies, since the items are scattered among some 440-odd fields throughout the state. The accompanying table presents the results of such a take-off for 16 major companies operating in the fields of Texas. Its significance lies in the relatively small part which it shows any one of these 16 giants of the industry to have in the total production activity. By far the largest single operator in the state is the Humble Oil & Refining Company, which outstrips its closest competitor by very nearly 100 percent, and yet this company controls less than 11 percent of the daily allowable from all fields. It is represented in but 96 of the 443 fields listed. In these fields it operates less than 11 percent of the total wells in those fields, and these 3721 wells are only a trifle more than 6 percent of all the wells in all fields. So much for the Standard of New Jersey representative.

Socony-Vacuum Oil Company is represented by the Magnolia Petroleum Company, which operates very nearly as many wells as does Humble and approximately the same percentage, based on the total wells in the fields in which it operates. But from the point of daily allowable, controls but 4.4 percent of the total as compared with Humble's 10.6 percent.

The Texas Company takes third place in number of wells, with 2829, but its daily allowable exceeds that of Magnolia.

Fourth largest operator by wells is the Gulf Oil Corporation with 2320 wells in 66 fields. Its daily allowable, however, is substantially higher than that of either Magnolia or The Texas Company, but still only a little better than half that of Humble.

Now not even a New Deal investigator would ever accuse these four concerns of acting in complete harmony in respect to securing crude oil reserves, and even if such a suggestion were made, it would have very little bearing upon the question of monopoly since together they control but 25 percent of the total daily allowable. The other 12 large companies divide between them but 19 percent of the total allowable, leaving 56 percent as the share of the smaller units, numbering into the thousands.

Some interesting conclusions dealing with the character of the operations of these companies can be drawn from the accompanying

MAJOR COMPANY INTEREST IN TEXAS CRUDE PRODUCTION
Entire State Outside of East Texas
Based on Texas Railroad Commission proration mimeographs for January, 1939

COMPANY	Fields	WELLS		DAILY ALLOWABLE	
		Total in Fields	Company Total	Total in Fields	Company Total
Amerada	22	8,922	335	226,991	7,732
Atlantic	33	19,732	431	250,942	14,966
Continental	29	22,489	1,004	306,957	14,400
Gulf	66	25,827	2,320	482,369	67,554
Humble	96	34,709	3,721	677,709	131,317
Magnolia	78	33,925	3,564	534,696	53,851
Ohio	15	7,492	344	128,793	16,930
Phillips	25	12,210	868	269,522	19,928
Pure	13	3,522	887	67,476	21,077
Shell	49	17,936	641	400,751	19,231
Sinclair Prairie	48	21,451	850	337,650	15,323
Skelly	26	17,197	451	279,132	11,462
Stanolind	46	12,269	1,530	378,043	56,050
Sun	61	12,277	580	380,162	19,457
Texas	84	35,806	2,829	539,270	54,969
Tide Water Associated	31	21,893	481	306,394	14,343
16 Companies	..	.....	20,836	.....	538,590
All Others	..	.....	38,667	.....	668,906
GRAND TOTAL	443	59,503	59,503	1,207,496	1,207,496

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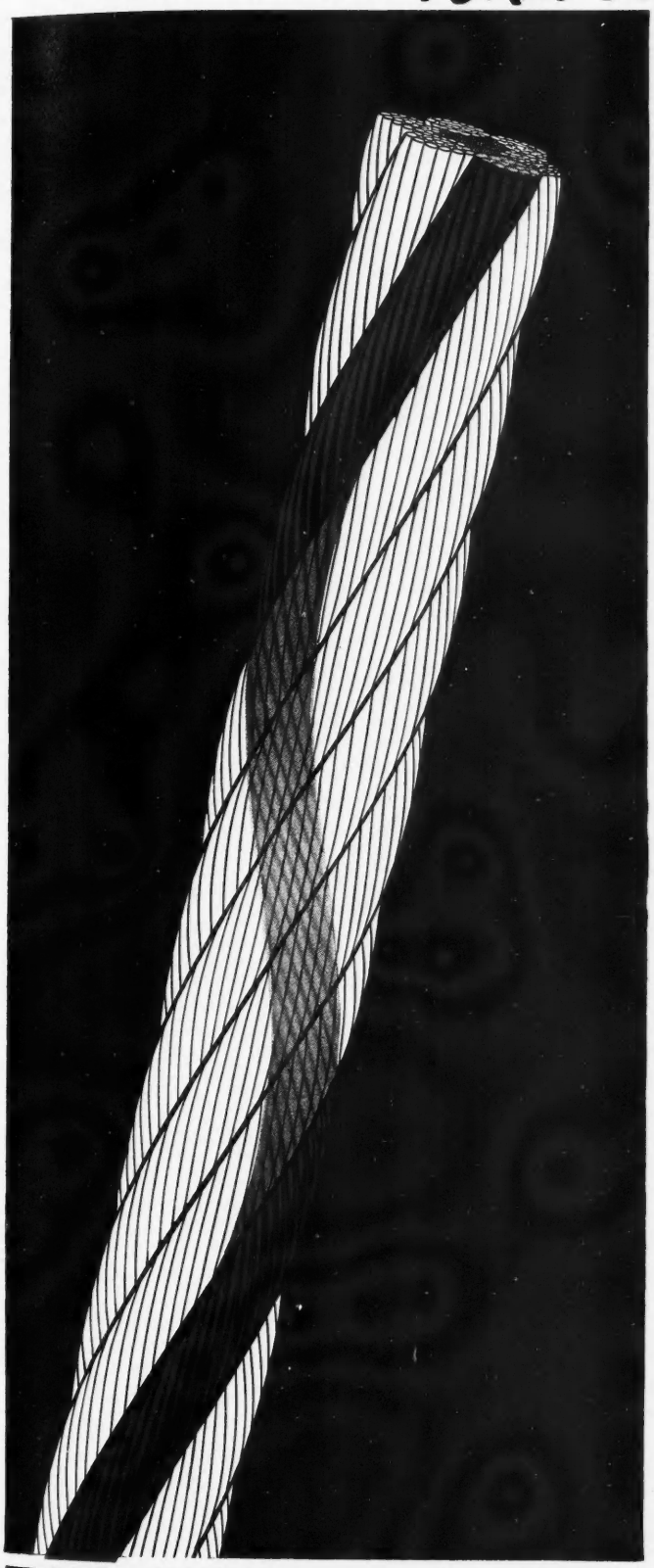

Here's what *FORM-SET* means

IN WIRE ROPE, individual wires and strands form a helical or screw pattern in the complete rope. Ordinarily these individual wires and strands are straight before entering the stranding and closing dies. They are forced into this helical shape and held there by seizing at the end of the rope. Remove this seizing, and strands fly apart from internal pressures.

By pre-forming rope, strands can be formed into this helical pattern before or during the closing of the rope. Individual wires are "set" in position at the same time. The result is a rope in which each wire and each strand lies in position without internal tension or pressure. Ends do not require seizing. The line might be termed "relaxed."

Form-Set is such a line. Strands have been preformed so that they are relaxed rather than being under spring tension. Not until the rope itself goes to work do the wires come under heavy stresses. As a result, the rope has greater fatigue life. It is easier to handle and break in. It spools better. It is less likely to kink. It resists whipping. Experience has shown that Form-Set gives more round trips per dollar in spite of its somewhat higher first cost.

The combination of Form-Set construction and Purple-Strand quality gives you as fine a rotary line as money can buy. Designed by men who know oilfield conditions, it is built especially for the oil field.

It is produced by a company which has spent three-quarters of a century making fine steel. For these reasons hundreds of drillers consider Form-Set Purple-Strand *the* line for rotary rigs.

Bethlehem wire rope is available through distributors. Write Bethlehem Steel Company, Bethlehem, Pa., for the names of wire-rope distributors in your vicinity.

BETHLEHEM STEEL

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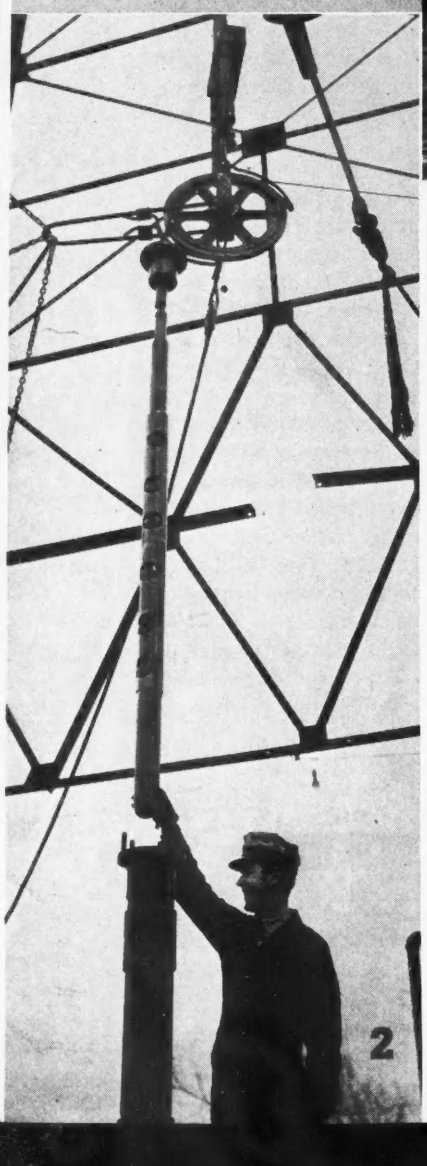
YOU GET THIS

12,000 to 16,000 feet of steel-shrouded cable is measured accurately over the suspended sheave to lower the gun to any depth yet drilled.



2

Lane-Wells pressure packing gland makes possible safe gun perforation of wells having pressures in excess of 2000 pounds per square inch above the hydrostatic pressure.

3

Powder is accurately measured and loaded to assure uniformity of charge for each shot. Each cartridge is tested electrically for continuity of circuit.

4

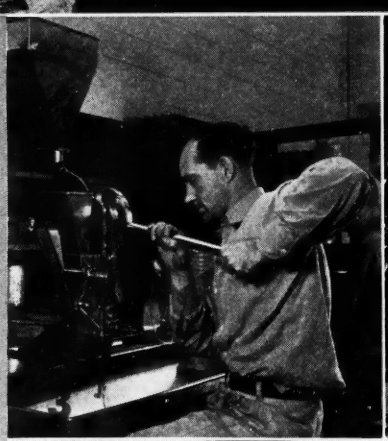
Each chamber passes many inspection tests before it is released for use. In the field constant checks maintain equipment to Lane-Wells high standards.

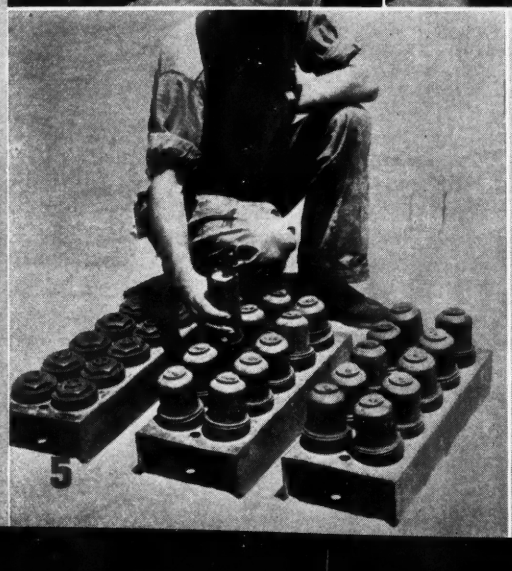
5

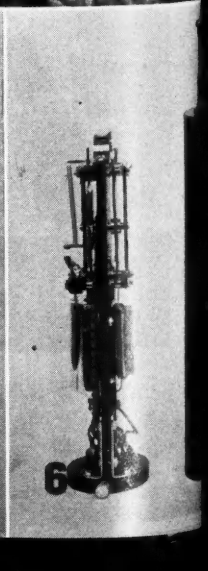
Each chamber is tested electrically at the rig before being loaded in the gun. Every possible precaution is used to assure efficient gun action in the hole.

6

The control head of Lane-Wells gun perforator makes possible individual discharge of shots and prevents multiple discharge which might damage casing.







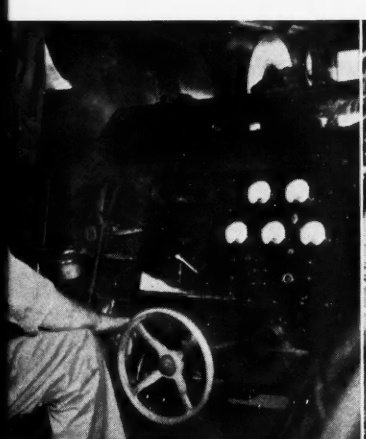
VITAL PROTECTION

ONLY WHEN *LANE-WELLS*
GUN PERFORATES A WELL FOR YOU

Every feature of Lane-Wells gun perforating operations was designed and developed to protect the tremendous investment in your well. Our engineers devised a reliable technique of electrical detonation of gun powder thousands of feet in the ground. Selective firing made possible successive discharge of individual shots to protect casing from mechanical trouble. Powder charges were regulated to give maximum penetration without damaging casing. Alloy steels were secured to provide sufficient strength for the tremendous pressures built up by gun powder explosions. Bullets were correctly shaped to penetrate steel easily. Fluid under high pressures had to be controlled. Accuracy of measurement, suitable weight suspending and current carrying methods made possible positive surface control of the gun at all times.

These and many other safety features are combined in Lane-Wells operating practice to provide complete protection for your well and your crews.

More than 2000 individual oil companies, for whom we have successfully gun perforated 20,000 wells can tell you—"It pays to play safe and get the protection ONLY Lane-Wells can give you."



...al of Lane-Wells experienced ...men is this veteran Operator who ...un perforated more than 1200 ... in the last six years under al... every operating condition.

The Rig Man loads the gun with pretested chambers as it rests on the buggy. The trays of loads on the platform are part of 380 shots used on this job.

The Rig Man controls the derrick safety switch. The gun cannot be fired until the Rig Man closes the switch to energize the firing circuit.

Selective firing from the truck is controlled by the Operator who has exact gun depth, line weight and other information in front of him.

LANE TECHNICAL OILFIELD SERVICES WELLS COMPANY

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Lane-Wells Services and Products Include: Gun Perforators Electrolog • Oil Well Surveys Packers • Direction Control of Drilling Wells • Liner Hangers Knuckle Joints • Single Shot Survey Instruments • Bridging Plugs • Whipstocks and Mills

table. Stanolind Oil & Gas Company's operations throughout are approximately half of Humble's, but apparently Stanolind operates chiefly in smaller fields, since the total wells in those fields in which this company operates are only slightly more than a third of the total wells in Humble's fields.

Humble and Magnolia are about on a par on a well basis, and the total wells in all fields in which these companies are active agree closely, but Magnolia is active in only 78 fields as compared to Humble's 96, indicating a greater number of wells in each field. Coupled with a daily allowable about 40 percent of Humble's, this points clearly to the fact that Magnolia is much more heavily interested in the older, more completely developed and more nearly depleted fields than is Humble.

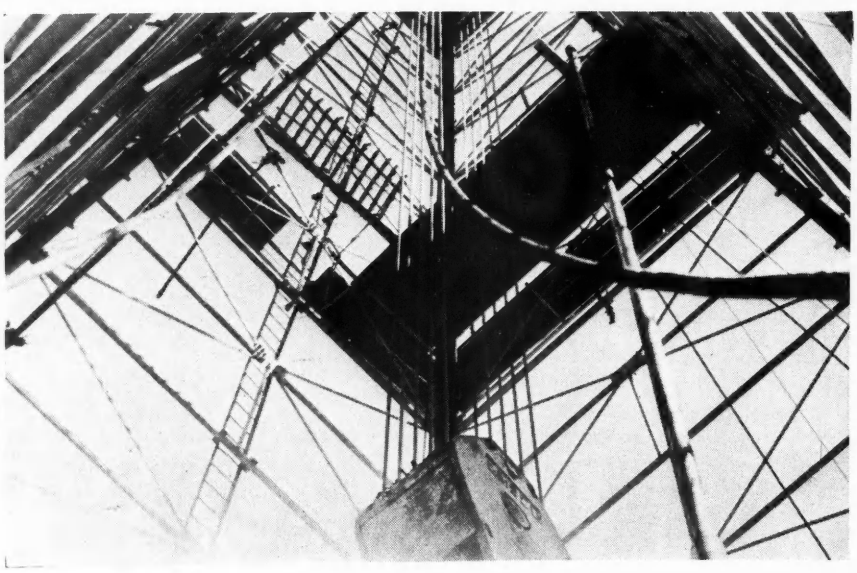
Sun Oil Company, with only 580 wells, is active in 61 fields, having 12,277 total wells. Sun's management apparently believes in putting only a few eggs in each basket, but a comparison of company allowable with total field allowable indicates it has carefully selected those eggs.

Many other similar indications will appear from a careful scrutiny of the table.

Throw Away a Few Feet of Rope and Save Several Hundred

THE manner in which contractors use wire rope on heavy-duty scrapers should, in itself, be a lesson in wire rope practice on many pieces of equipment. Large 12 to 20-yard scrapers chew up the wire rope like nobody's business. So fast indeed that contractors use the best rope they can buy, then carry enough on the drum or spare reel to permit cutting off ten to fifteen feet each day or two—drawing the remaining rope into place and thus make use of the entire rope length.

On practically every running wire rope there is a localized spot or two where the rope is frequently bent over sheaves during the time when the greatest load is applied. Ordinarily this occurs when the rope, in carrying its load, is gaining increased speed. The rope has to lift its load from a standing start to maximum speed and very frequently has to do it with rapid acceleration. It is during this period of rapidly increasing speed, under load, that the rope tension is greatest and of course the frictional pressure of the rope against the sheave groove surface of greatest value. But also it is right here that (because of the extreme pull load) the rope has a tendency to slip over the sheaves. This slippage, combined with the extreme radial pressure, results in vicious surface wear in these localized spots.

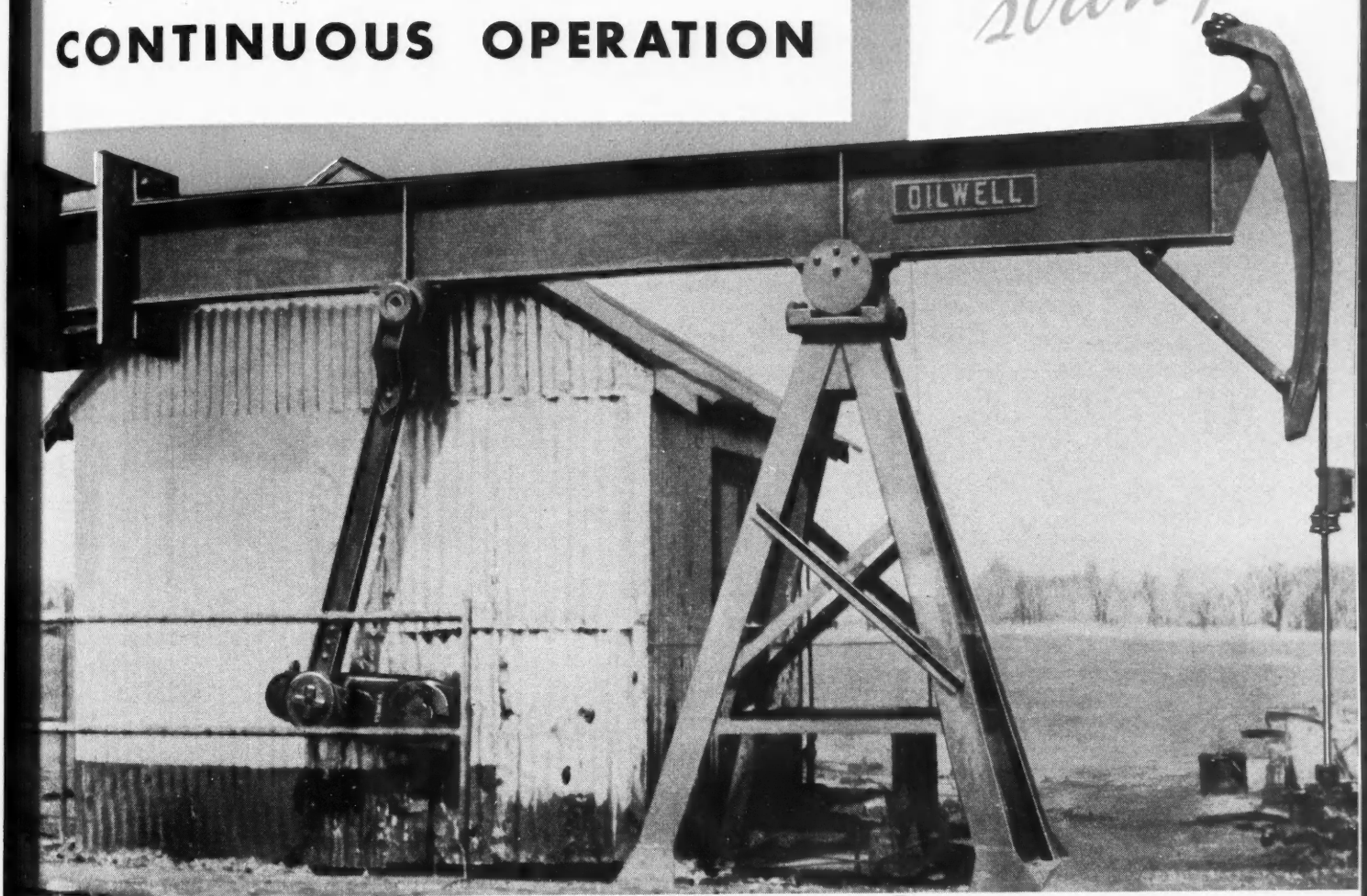


For examples of rapid and spotty wear we can look to the several sections of rope located over the sheaves within both the crown and traveling blocks of a rotary oil well drilling rig when a string of pipe is being lifted. Here will be frequently found examples of localized wear. But such spotty wear should not condemn the entire line for further service. As in the case of scrapers it is merely necessary to cut off a precalculated length of wire rope—then pulling the rope forward and reattaching it. This will change the spots where maximum wear occurs and distribute the deterioration over a greater length of rope, thereby increasing the rope's life by postponing its retirement. In doing this it will be found that preformed rope will cut without the necessity for seizing or serving wire, handle easier and reeve faster.

It is good practice to reeve on the drum a somewhat longer length of rope than is actually needed for the job in order that this readjustment of line position may be accomplished.

YEARS OF CONTINUOUS OPERATION

—and still going strong!



This "Oilwell" Pumping Unit in Kansas will soon have completed 50,000 hours of hard service with its original working parts in excellent condition

UMPING service in Kansas with its en-rance-testing potentials has not been easy. hen a unit which has been subjected to ch service continues to perform as this e and hundreds of others are doing, con-deration must be given to the reasons for stamina. Here are four:

1. Conservative Rating — an Established "Oilwell" Policy.
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4. Over-size Bearings, Pins and Shafts Throughout with Ample Provisions for Lubrication and Weatherproofing.

The present *"Oilwell"* Pumping Units and Speed Reducers have these same fundamental advantages. In addition, refinements and new features give improved efficiency and convenience and assure even greater dependability.

Consult the nearest *"Oilwell"* branch regarding your production equipment needs.

"Oilwell" ODH-18 Pumping Unit No. T11-4 was installed on December 10, 1933, in the Ritz-Canton field near McPherson, Kansas, on a 2952-ft. well. It has been in continuous service ever since. This unit is now pumping with ¾-in. rods through 2½-in. tubing at seventeen to twenty-one 37½-in. strokes per minute. Service in its earlier years is said to have been more severe, including many back-breaking potential tests.

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PART VI

IX. Application of Various Plug-Back Methods With Particular Reference to the East Texas Field

MANY types of plug-back operations have been developed in the past, and, in fact, still are used widely for plugging back wells to higher formations and for the exclusion of water. Some of the most commonly-used methods will be described briefly before beginning a description of the particular problems involved in a few important fields and areas.

1. *Dump-Bailer Method*

The use of the dump bailer is one of the earliest methods employed in plug-back operations, and still is used widely in fields that are being drilled with cable tools. Cement slurry, in an amount sufficient to fill up the hole to the point desired, is mixed in advance and poured into the bailer, which is run to the bottom of the hole on the sand line. When the bailer reaches the bottom of the hole, it is opened mechanically through a latch engagement connected with the bailer rod. The cement thus is deposited, and the bailer then pulled from the hole. This procedure is repeated until the predetermined amount of cement has been placed. After the cement plug in the bottom of the hole has set, the well then may be tested for fluid exclusion.

2. *Pump-and-Plug Method*

In this method tubing first is run to within 1 foot of the bottom of the hole. Cement slurry then is pumped through the tubing; and after all of the cement has been introduced, a wooden plug is placed in the tubing above the cement, and then water is pumped in after the plug until the plug strikes the bottom of the hole. The tubing then is raised the desired distance—making allowance for pump wash—and any excess cement removed by reverse circulation.

3. *Balanced Method*

The tubing or drill pipe is run to about 1 foot off the bottom of the hole. Circulation is established, and the weight of the circulating fluid equalized inside and outside of the tubing. A calculated amount of cement slurry then is pumped into the tubing, and is followed by circulating fluid. Inasmuch as the success of this method depends upon the excess weight of the cement slurry over that of the circulating fluid, causing the slurry to equalize in height on the outside and inside of the tubing at the bottom of the well, it is essential that the fluid pumped in after the cement be of the same kind and weight as that which was in the well before the cement was introduced. In order to prevent vacuum, which might affect equalization, the top of the drill pipe or tubing must remain open. After the cement level has equalized, the tubing is raised to a point just above the top of the formation to be plugged off, and all excess cement removed by reverse circulation. After the excess cement has been washed out, the tubing is pulled; and the cement plug, remaining in the bottom of the hole, is permitted to set.

4. *Displacement Method*

The displacement method is similar to the balanced method except that a measured amount of fluid is pumped into the drill pipe or tubing, immediately after the cement slurry has been introduced, to force the cement to rise in the hole to a predetermined level. For this reason the tubing must be kept closed until all of the cement has been placed, and some excess cement must be used to prevent contamination of the slurry by mud when the tubing is raised. After the cement has been pumped to bottom, the tubing then is raised a short distance above the top of the plug-back level; and the excess cement, which has been placed as a matter of protection, is washed out by reverse circulation. The cement plug, remaining in the bottom of the hole, then is allowed to set before the well is tested.

Other particular plug-back methods that have been developed for application in the East Texas field will be described subsequently in this section.

In all plug-back jobs it is most desirable to clean the hole out as thoroughly as possible in order that there may be a good contact surface for the cement plug to bond to. For this purpose the section of formation to be plugged is reamed frequently or shot with explosives to clean its surface and to provide a cement shoulder to resist the thrust pressure of the water after the well has been re-completed.

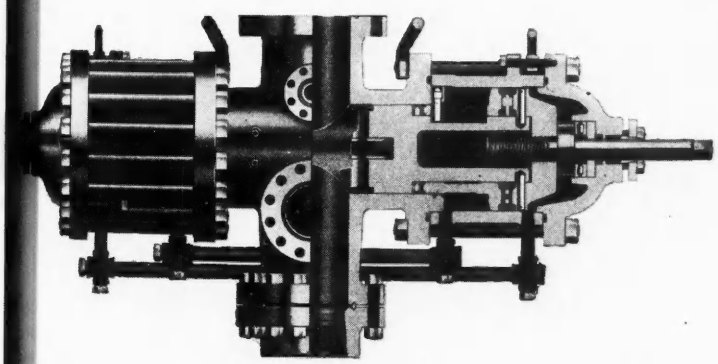
There are, obviously, any number of fields wherein various plug-back methods are being employed; and to describe in detail the procedure that is followed in all

Part 1 of this paper, which was presented at the Mid-Year Meeting of the American Petroleum Institute at New Orleans, appeared on page 26 of the issue of May 22. Part 2 appeared on page 36 of May 29 issue; Part 3 on page 40 of June 5 issue; Part 4 was on page 17 of June 12 issue. Part 5 was on page 24 of June 19 issue. Part 7 will appear next week.

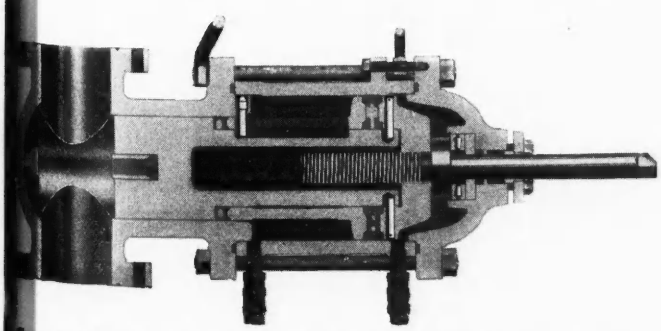
39 out of 40

IMPORTANT LOUISIANA GULF COAST WILDCATS NOW DRILLING ARE

"Cameron-ized"



Cross-section view of Cameron Type SDA, Series 900 API—6000 lbs. test—Pressure Operated Blowout Preventer.



Cross-section view of Cameron Type DV, Series 900 API—6000 lbs. test—Pressure Operated Master Gate Valve.

A survey of wildcat operations in the Louisiana Gulf Coast area, where depths range up to 13,000' and pressures run as high as 5,000 lbs., reveals that 39 of the 40 rigs engaged in deep exploratory drilling as of June 15, are Cameron equipped.

With few exceptions, these 39 "Cameron-ized" rigs are equipped with Cameron Series 900 API—6000 lbs. test—Full Pressure Operated Drilling Control Units consisting of a Type SDA Blowout Preventer, Type DV Master Gate Valve and Type DV Flow-Line Gate Valve. These rugged, powerful control units enable drilling crews to master, instantly and positively, the highest well pressures encountered. They close swiftly and seal unfailingly. Remote control from the derrick floor facilitates instant operation. Self-centering rams automatically center pipe between concave ram faces, and self-feeding ram packing elements automatically take up wear occasioned by rotation and raising and lowering of the drilling string while circulating under pressure to kill kicking well pressures.

The widespread use of Cameron Drilling Control Units in this intensely active area is indicative of the unqualified endorsement given this equipment for service in both wildcat and proven high pressure fields throughout the Gulf Coast, Mid-Continent and many foreign fields.

Operators who are planning the purchase of new control equipment are invited to write for full mechanical details of design and construction of Cameron Series 900 API—6000 lbs. test—Pressure Operated Drilling Control Units.

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of these would involve an almost endless discussion. It is proposed, rather, to restrict our attention to a few distinctive fields or areas in which plug-back methods are being used rather extensively, and in which new technique of interest recently has been developed.

West Texas—General

In many of the West Texas fields porosity in the producing Permian lime section is restricted largely to the high-structural areas, and thus lateral water encroachment is not such a serious problem. Problems of water exclusion, therefore, generally are associated with wells that have been drilled too deep into the lime section, or with old wells in which there has been an upward coning of the water which occurs below the oil pay. Squeeze cementing in open hole without a retainer has been used in a few fields, with fair results; but, owing to the high permeability of the lime section, it often has proved to be quite difficult to build up a squeeze pressure of sufficient magnitude to give a satisfactory shut-off. In a few wells the retainer has been used for squeezing; and, by the use of multiple batches, it has been possible to build up a maximum squeeze pressure that will give better results. So far as can be determined, however, there has never been an entirely successful water exclusion by squeeze cementing in the West Texas lime fields.

Probably the most common method employed for plugging back is the displacement method, which has been described previously. This is particularly the case in new or fairly new fields wherein the bottom-hole pressure is still reasonably high. In low-pressure areas, or in areas in which the wells are dead due to water encroachment, the dump-bailer method is used. When cores or electrical logs are not available to indicate the position of the water-bearing strata in the hole, plugging back with the dump bailer can be done in stages. If the shut-off from the first plug-back is not successful, another batch of cement is lowered into the hole—and this procedure repeated until no water is evident.

Squeeze cementing has not been used in low-pressure areas or partly-depleted fields; for it is the general opinion that squeezing against what is sometimes an almost cavernous section will force some cement back into the oil-bearing part, and thus have a tendency to prevent a free flow of oil after the well has been re-completed—even though the cement might not take a permanent set. If, perchance, too much cement is placed in the hole, by the displacement or dump-bailer method, so that the well will not produce in a normal manner, the cement plug is drilled out gradually until oil begins to come in. The cement, being placed without any artificial pressure by these methods, apparently does not have any harmful effects on the oil pay.

Lead wool still is used in some cable-tool drilling operations but it is not so successful in shutting off water as the cementing methods. Bottom-hole packers also have been used, and in some cases have given good results. Even when a tight fit can be obtained between the packer and the wall of the hole—which is the exception rather than the usual condition—the deterioration of the packer over a period of time cannot result in permanent shut-offs.

In one feature of plug-back work in West Texas there seems to be unanimity of opinion; i. e., that it is extremely difficult to shut off water after a well has been shot. It is further the consensus that it is virtually impossible to shut off water after a well has been acidized—this being due, undoubtedly, to the channeling effect caused by the action of the acid in beds of high permeability.

Rodessa Field, Caddo Parish, Louisiana

The major geological feature of the Rodessa field is a northeast-southwest fault, which extends from the northeast part of Texas across the northwest corner of Louisiana and then on into the southwest corner of Arkansas. The upthrown side of the fault is to the north, and it is here where the closure exists which has been responsible for the accumulation of oil and gas. Production is obtained from the lower Glen Rose formation of lower Cretaceous age.

Four different producing horizons are recognized in the Louisiana part of the field. These are, in descending order: the Hill, which carries gas and has a thickness of from 10 to 40 feet; the Gloyd or Caddo Levee Board, which yields both oil and gas, and has a maximum saturated section of from 80 to 85 feet; the Dees sand, which is predominately an oil-bearing formation, and has an oil-saturated thickness of from 15 to 20 feet; and the Young, which has an average thickness of 40 feet. The Young is divided into an upper and lower zone, with a shale break between. In Miller County, Arkansas, in the northeastern extension of the field, the Gloyd is divided by a break—the upper member being referred to as the Gloyd lime, and the lower member as the Mitchell sand. In Marion County, Texas, the Gloyd is divided into the Henderson sand and the Gloyd lime, usually with a break between. Water is found down-the-dip in all of these various horizons; and after a productive life of more than 3½ years, water has encroached into quite a few of the low-structure wells, and has required a considerable amount of remedial work. Gas is found in large quantity in the higher parts of the structure; in fact, the field produced no oil for almost five years after its original discovery. The withdrawal of oil from the saturated zone, occurring along the intermediate flanks of the structure, has caused the gas/oil contact to move downward—thereby increasing materially the gas/oil ratio in many wells. Remedial work for the reduction of high gas/oil ratios, therefore, is being required on an increasing scale, as well as for the exclusion of water.

It has been pointed out previously that squeeze cementing has been used largely for the purpose of shutting off an entire producing horizon, and the greater part of the remedial work for the exclusion of water has been done by either the dump-bailer or the displacement method, and excessive gas has been reduced by setting and cementing sub-strings of pipe and perforating the same in a manner that best will keep the gas out of the well. Plug-back methods for the exclusion of water, on the whole, have given very good results. Of 15 wells that have been studied, entire water exclusion has been obtained in 13 wells, and shut-offs have been effected partly in 2 wells. An example of a partly-successful and an entirely-successful re-completion job is presented in the record of the following two wells.

Well "A"—Partly Successful

This well was entirely dead, due to salt water, before it was re-worked. In an effort to plug off water, the bottom of the hole was cemented from 6022 to 6042 feet. The cement was drilled out to 6027 feet, and testing showed a small amount of oil and no salt water. The cement then was drilled out to 6031 feet, and testing showed an increase in oil and a very little salt water. Two drums of acid were

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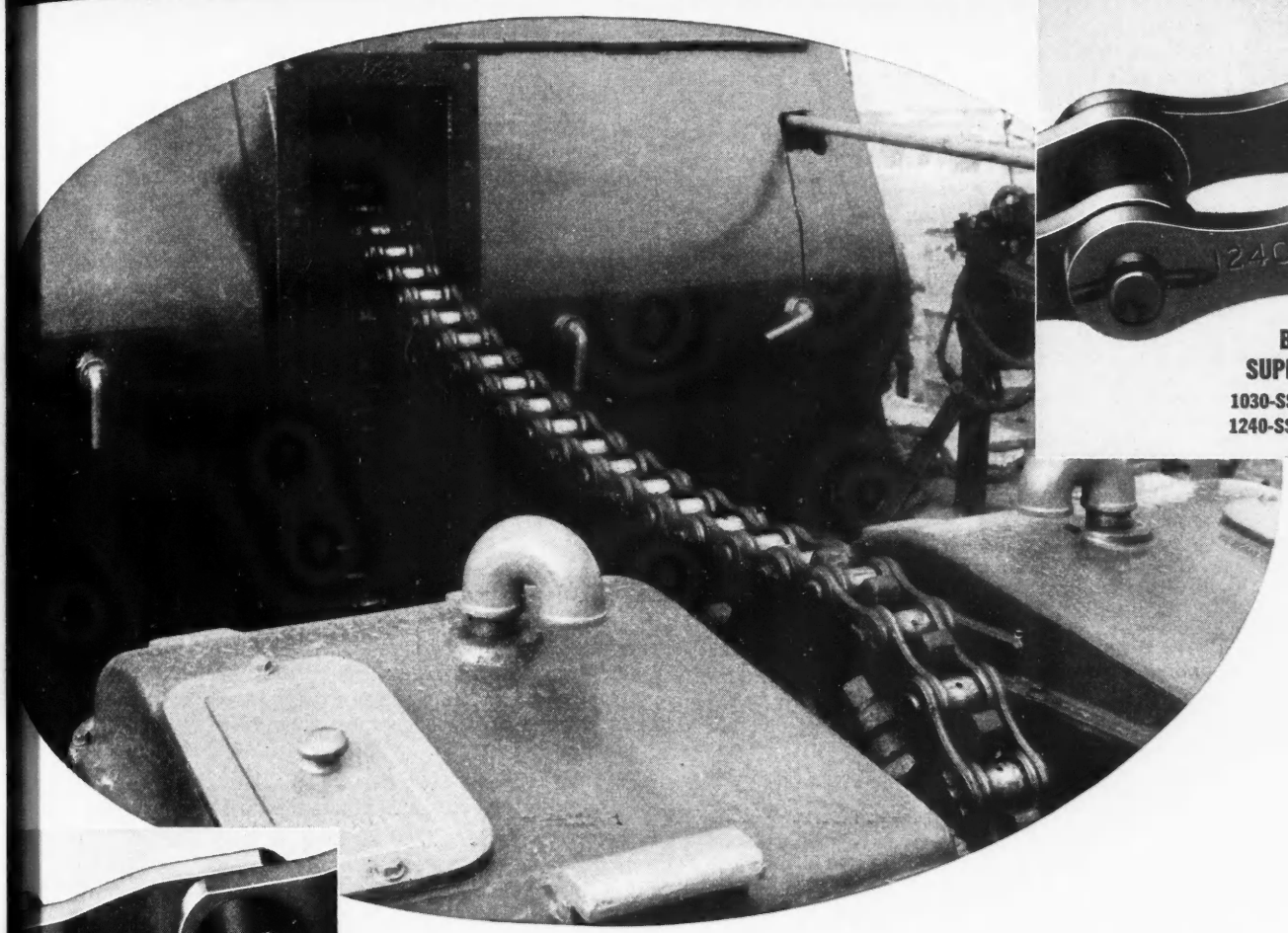

FULL FLEX
33,000 lbs.
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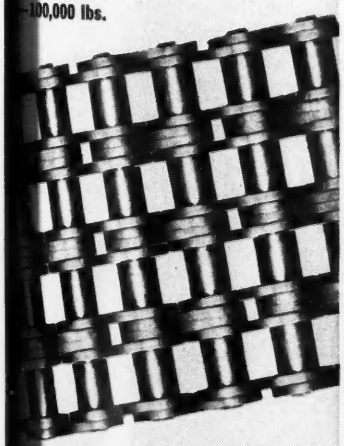

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dumped into the well and allowed to set over night. When the well again was tested, there was no increase in either oil or water. The cement then was drilled out to 6033 feet; and, on test by swabbing, the well made 34 barrels of oil and 109 barrels of salt water in 8 hours.

It will be noted that the procedure followed in this well is the reverse of that employed commonly in the West Texas lime fields, where the wells are plugged back gradually up the hole until an effective shut-off has been obtained. The oil-pay section in this well at the time of the work-over was probably quite thin, and presumably the upper part of the pay was quite tight, because it did not react favorably to the acid treatment. In order to obtain the maximum oil production possible for the time being, the operator in this case took in part of the section that was water-bearing.

Well "B"—Successful Re-completion

This well was practically dead from water when it was re-worked. The hole was washed and sand-pumped before 13 sacks of cement were placed on bottom. The cement was drilled out to 6095 feet; and the well, when tested, made 56 barrels of oil, and no water, per day. The well then was acidized in an attempt to increase the oil production, with the cement plug protected by a 5-foot gelatin column. Two thousand gallons were used with a maximum pressure of 1900 pounds per square inch. The acid treatment brought in salt water, drowning out the oil. The cement plug then was drilled out, and the bottom of the hole again plugged with 12 sacks of cement. After the cement had set, the plug was drilled out to 6095 feet; and, when tested, the well made 60 barrels of oil per day and no salt water. The cement plug then was protected with 20 feet of mud, and the well treated with 550 gallons of acid from 6052 to 6058 feet, with a maximum pressure of 1500 pounds per square inch. Tubing then was run to 6084 feet, with a ring-type packer which was set at from 6019½ to 6024 feet. On test, the well then flowed 136 barrels of oil per day through a ⅜-inch choke, with no water and a gas/oil ratio of 1306 to 1.

An example of the Rodessa method for reducing high gas/oil ratios by the setting of a sub-string liner is given in the record of the following well.

Before work-over, this well was producing at the rate of 41 barrels per day, with a gas/oil ratio of 21,240 to 1. The hole was filled with 12 sacks of cement from 5994 to 6035 feet; and after the cement had set, the plug was drilled out to 6001½ feet and 31 feet 9 inches of 17-pound 5½-inch A.P.I. 10-thread seamless liner was set on top of the plug. The plug then was drilled out further to 6006 feet, and a ring-type packer was set from 5941½ to 5946 feet. The well then was acidized with 500 gallons which went in with an initial pressure of 600 pounds per square inch and ended at zero pressure. The well again was acidized, using 1500 gallons, which were pumped in under no pressure. On potential test, after the second acidizing job, the well made 129 barrels of oil per day through a ¼-inch choke, with a gas/oil ratio of 3945 to 1.

East Texas Field; Rusk, Gregg, Upshur, Smith and Cherokee Counties, Texas

Plugging-back methods are being attempted rather widely in the East Texas field, particularly in the vicinity of Gladewater, along the western edge of the field, where excessive quantities of water are produced. The low allowables in this field make the pumping of large quantities of water an important item of expense, and, in addition, the increasingly difficult problem of water disposal has made it most desirable to eliminate the handling of as much water as possible.

A large variety of plug-back methods has been employed for the purpose of shutting off water. These methods may be classified in 4 different groups, with a total of 12 types, as follows:

Group 1—Straight plug-back jobs, of which there are 2 types.

Group 2—Bradenhead squeeze jobs, of which there are 3 types.

Group 3—Retainer squeeze jobs, of which there are 4 types.

Group 4—Short-string cement jobs, of which there are 3 types.

Group 1—Straight Plug-back Jobs

Type 1: When a straight plug-back job is used, and the cement plug is cut off below the top of the oil sand.

In this method the tubing is run to the bottom of the well; then raised a few inches, enough to permit free circulation. The cement then is mixed and pumped into the tubing. The slurry is followed with a measured amount of fluid to equalize the level of the cement at the bottom of the hole. Next, the tubing is raised, and the cement plug is cut off below the top of the oil sand, and the excess of cement is washed out. All of the pressure that is used is the pressure that is required to pump the cement down the tubing and to wash out the excess cement. Some operators prefer, after the excess cement has been washed out, to raise the bottom of the tubing up into the casing and to leave the well closed in under pressure. After the cement has set, all that is necessary is to run the tubing back to the plug-backed bottom of the hole and bring the well in, as the top of the oil sand has been left exposed. It is necessary to know where the top of the oil sand is, either from the core log of the well or from the use of an electrical log. This type of plug-back job is essentially the same as the displacement method that has been described previously, and has been used by various operators who make a practice of plugging back their wells as soon as any salt water appears. Some very good results have been obtained on wells making a very small percentage of salt water.

Type 2: When a straight plug-back job is done, and the top of the cement plug is cut off up in the casing.

The cement is equalized in the bottom of the well. The tubing then is raised up to a point in the casing; the cement plug is cut off in the casing; and the excess cement is washed out. After the cement has set, the cement plug is drilled out dry, using cable tools to penetrate the sand only from 6 inches to 1 foot.

Group 2—Bradenhead Squeeze Jobs

Type 1: When the cement plug is cut off below the top of the oil sand.

On this type of exclusion job it is necessary to know definitely the top of the oil sand. After the cement has been equalized at the bottom of the well, the tubing is raised in the hole, the cement plug cut off below the top of the oil sand, and the excess cement washed out by reverse circulation. The tubing then is raised to the point where the bottom of the lowest joint is in the casing; pressure is applied, and the well closed in. This leaves the cement plug to set under pressure. On this type of job the pressure usually is run up to from 500, to 800 pounds per square inch. After the cement has set, the well then is brought in by running the tubing back to the plug-back depth, as the top of the oil sand has been left exposed. Some operators who use this method prefer to close the casing, as the cement starts out of the tubing, and to squeeze some of the cement into the water-bearing part of the sand; then to release the pressure, and proceed to finish the job in the customary manner. The application of this method has proved to

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be very successful in wells making only a small percentage of water.

Type 2: Bradenhead squeeze job, when the top of the cement plug is left extended up into the casing after cement slurry has been squeezed into the formation.

On this type of job enough cement is run and equalized at the bottom of the well to fill the open hole and usually the lower 150 feet of the casing. The tubing then is raised 100 feet up in the casing, and the cement above this point washed out by reverse circulation. The tubing then is raised another 100 feet. The casing is closed; and, using a measured amount of the fluid pumped into the tubing, a part of the cement that is in the bottom of the casing is forced into the formation—usually leaving from 20 feet to 30 feet of cement in the bottom of the casing. The well then is closed in, and the cement sets under pressure. In some cases the operator, after the cement has been squeezed in the formation, releases the pressure, drops the tubing back in the cement, and cuts the cement plug off below the top of the oil sand. This is done by reversing the circulation, as the tubing is being lowered in the cement. After the cement plug has been cut off, the tubing is raised up in the casing, and the well closed in under pressure. The amount of pressure that is used in this type of job depends on the condition of the casing, as all of the pressure that is applied on the cement is also on the casing. This type of exclusion job has been very successful in wells that are making a small percentage of water.

Type 3: Bradenhead squeeze job, in which the cement is pumped under pressure and the excess is pumped out through an adjustable flow bean.

The tubing is run to within 20 or 30 feet of the bottom of the casing. On this type of job the formation is broken down with water, and the cement is pumped in under pressure. The amount of pressure applied in this type of job depends on the strength of the casing, as all of the pressure is on the casing. Next, the excess cement is washed out under pressure through an adjustable flow bean. Then the tubing is raised again under pressure, and the well is closed in under pressure. After the cement has set, it is drilled out down to the top of the sand to bring the well back in. It is common practice to wash the well with water. By doing this a part of the sand remains in suspension between the tubing and casing. For this reason it is generally quite hard to apply this method; and it might, perhaps, be better to wash the well with mud, in order to carry out the fine sand particles. It is almost essential to have a slip-type head in order to use this type of job, and for this reason it is not employed commonly in the East Texas field.

Group 3—Retainer Squeeze Jobs

Type 1: Retainer squeeze job, in which the production string is cemented above the oil sand.

This is the most common type of plug-back method that is used in the East Texas field for the purpose of excluding water. The cement retainer usually is set from 10 to 20 feet up from the bottom of the casing, and it is common practice to pump from 5 to 10 barrels of water into the formation as an initial break-down. The water is followed with cement slurry, and cement is pumped into the formation until a pump pressure of at least 3,000 pounds per square inch, if possible, has been attained. A high maximum squeeze pressure appears to be necessary if the well is making a large percentage of water. After the cement has set, the retainer and cement—down to the top of the oil sand—are drilled out, usually with cable tools.

Type 2: Retainer squeeze job using tail pipe, when the production string is cemented above the oil sand.

This is the same type of job as *type 1,* with the exception that the tail pipe is connected on the bottom of the retainer, and usually extends to within 1 or 2 feet from the bottom of the hole. This makes the passage of the cement into the open hole below the casing originate at the bottom of the well. This is particularly important when there is a caving formation below the production string of casing. The tail pipe is used also to insure a uniform mass of cement with uniform pressure for the entire distance, from the bottom of the hole up, in which the cement is placed. The tail pipe is drillable material. After the cement has set, the retainer, cement, and tail pipe are drilled down to the top of the oil sand. In most cases this is done with cable tools, and the well drilled in dry.

Type 3: Retainer squeeze-job cementing through gun perforations.

This type of squeeze job is used on wells in which the production string is set all of the way through the oil-producing formation and the operator wishes to cement off shot holes in the lower part and produce from the upper part of the sand section. On this type of job the retainer is set within 1 or 2 feet above the top of the shot holes, and from 5 to 10 barrels of water are pumped into the formation to break it down. The water is followed by cement slurry until a maximum squeeze pressure, if possible, of 3,000 pounds per square inch has been attained. To bring the well back in, after the cement has set, the retainer may be drilled out and the well perforated in the upper part of the sand. In some cases the retainer is left in the hole as a bridge plug, and the well is completed above the retainer by gun perforation. This method can be used also in a well in which a short string has been cemented in the bottom of the hole, and thus permits the operator to produce the oil from the sand from the bottom up, rather than from the top down.

Type 4: Retainer squeeze-job cementing through a perforated liner, or by cementing off water when a full-hole cementer has been used.

On this type the retainer is set above the perforated liner, when there is a liner in the hole; or, in case a full-hole cementer has been used in the oil string, the retainer is set above the full-hole cementer. Water then is pumped into the formation to break it down, and the water is followed by cement slurry. The pressure used is usually the same as for other retainer cement jobs in which a maximum squeeze pressure, if possible, of 3,000 pounds per square inch, or greater, is attained. After the cement has set, the retainer is drilled out of the perforated liner down to the oil sand. In some cases the wells will come in after the cement has been drilled out down to the level of the oil sand without further gun perforating. In other cases, however, it is necessary to gun-perforate the liner in order to bring the well back on to production.

Group 4—Short-String Cement Jobs

During the last two years considerable progress has been made in using a setting tool which allows the operator to use a wash pipe to the bottom of the short string. At the present time two types of these tools are on the market. The first type connects to the top of the liner, and has a wash pipe that extends to the anchor shoe. After the cement job has been com-

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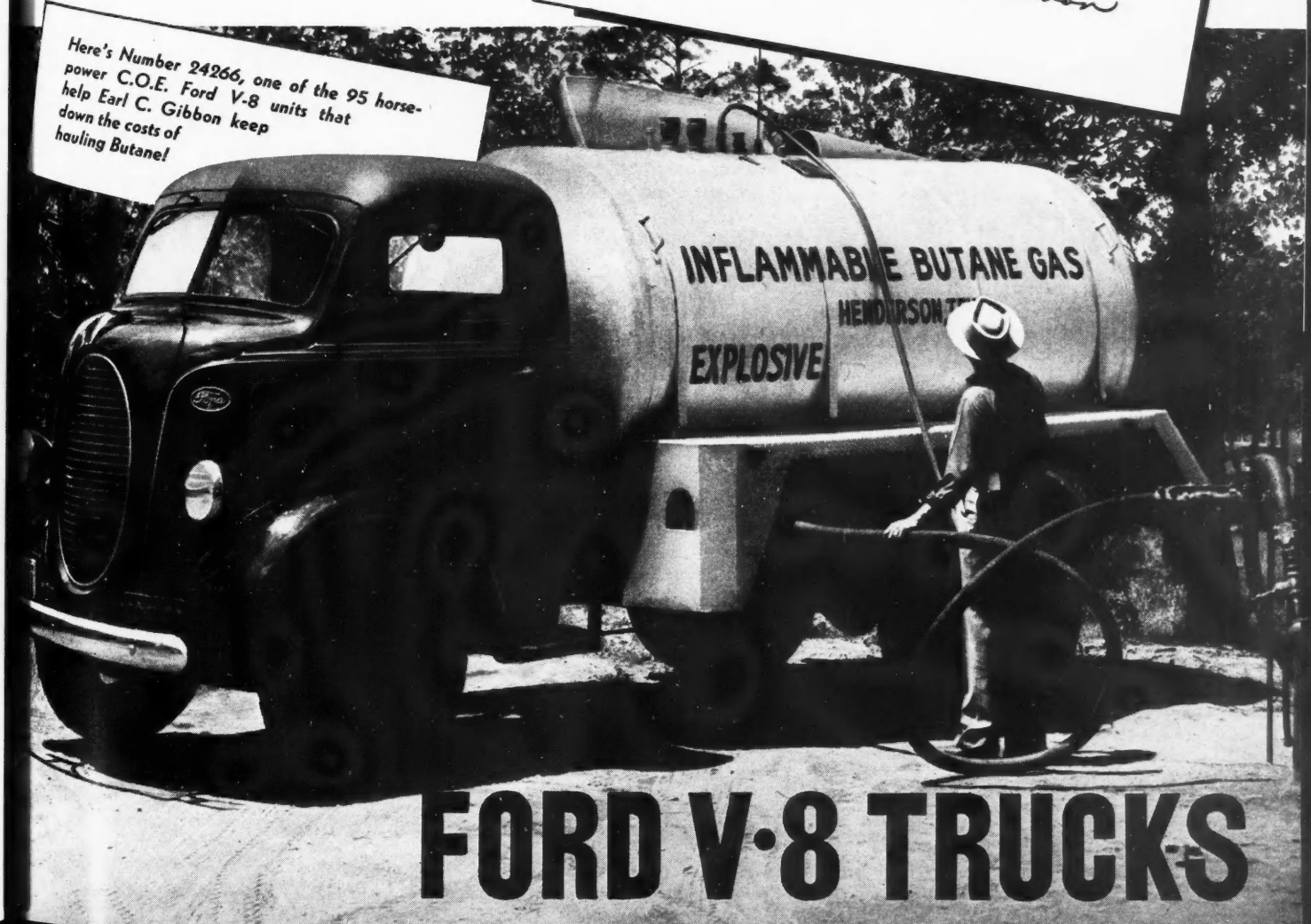

FORD V-8 TRUCKS

pleted, the setting tool is backed off from the short string. In some cases, when a packer is used on the short string, the weight of the tubing or drill pipe collapses the packer, after the setting tool has been backed off. The second type of setting tool is the type that screws in the bottom of the short string or in the anchor shoe. On this type of tool the short string is made up with the anchor shoe on the bottom. The tubing or drill pipe then is run into the short string, and the setting tool is screwed into the anchor shoe. When using this type of tool, the short string is equipped with a rubber centralizer to hold the tubing or drill pipe in place at the top of the short string. In both cases, after the cement job has been completed, the cement is held back of the short string by a back-pressure valve in the anchor shoe. All the cement that is left in the tubing or drill pipe, and in the inside of the short string and above the short string, then is washed out, as the wash pipe extends all of the way down to the anchor shoe. This eliminates a drilling-out job after the cement set has been completed. It is also possible to swing a short string off bottom and cement it. This type of tool has been used only a few times.

Type 1: When a short string is used to cement off a heaving formation between the bottom of the casing and the top of the oil sand.

In some places in the East Texas field the interval between the Austin chalk and the Woodbine sand gives considerable trouble by heaving in and bridging off the well. This problem has been overcome by cementing a short string in the bottom of the well, which extends from the bottom of the hole and has an overlap up into the production string of casing. This short string is run in on the tubing or drill pipe with a setting tool using wash pipe. The short string is cemented, and all excess cement washed out of the short string and out of the casing. After the cement has set, the well is brought back in by gun perforating. This type of job has been successful also in wells that are making a small percentage of salt water.

Type 2: Short-string squeeze job using bradenhead.

This type of job is used to cement off water above or below the oil-producing formation. Most operators prefer to run an electrical-logging device on the well before commencing to work-over. It is common practice to underream the hole and then to run the short string to the bottom, either on the drill pipe or on the tubing, using a setting tool with a wash pipe. After cement has been pumped up around the short string, the casing is closed and cement pumped into the formation. The pressure then is released, and the cement remaining is washed out of the short string and out of the casing. The well is brought in by gun perforating the short string. This type of re-completion is especially applicable to wells that are making a high percentage of salt water—provided the casing will stand a high-pressure squeeze job. With this type of job it is possible to produce the oil out of the lower section of the sand; and when this section becomes watered-out, it is squeezed off and the casing or liner perforated higher up, and production again established.

Type 3: Short-string squeeze job using a special tool to keep the pressure off the casing.

Until a few months ago there had been only one job of this type attempted in the field, and it is, therefore, an entirely new type of exclusion method. This special tool used a wash pipe extending to the bottom of the short string; and after cement had been pumped up around the short string, the tool was backed off from the top of the short string; and, by letting the weight of the drill pipe down onto the tool, the packer was collapsed and was held down by a set of hold-down slips. On the wash pipe in the short string there is a second packer which allows the operator to pump cement down through the tubing or drill pipe and out through the anchor shoe and into the water-bearing formation, without applying pump pressure on the casing. Thus pressure is held on the formation by the packer between the short string and the production string of casing, and by the back-pressure valve in the bottom of the anchor shoe. The pressure in the tubing or drill pipe then is released, and the packer on the inside of the short string is pulled up above the top of the short string, and the cement remaining washed out of the casing and the short string. On the particular well on which this type of exclusion method was tried, a squeeze pressure of 1,900 pounds per square inch was attained. Water was excluded successfully from the well.

The cement used in the different types of plug-back jobs in the East Texas field for the exclusion of water has been generally of the slow-setting type. During the last year considerable progress has been made in the use of gel-forming cements. Gel-forming cement is either a mixture of standard slow-set cement with an added amount of bentonite colloidal, or an extremely-fine ground cement with some other admixture to make it gel.

The gel-type of cement is pumped into the formation the same as in any other ordinary squeeze job. When all of the cement but the last 30 sacks has been pumped out of the tubing and the pressure is not up to the desired maximum squeeze pressure of 3000 pounds per square inch, the pump is shut-down. By giving these new gel-forming cements a 5-minute shut-down period, the cement begins to gel; this, in turn, causes a greater resistance to the movement of the cement slurry into the formation. The pump is started again, and usually 5 more sacks of cement are pumped into the formation. Then if the pressure does not go up to the desired point, the pump is shut down again for another 5-minute period. Usually after the second or third shut-down period, when the pump is started again, the pressure will go up to around 3000 pounds per square inch, and in most cases remains there. The succeeding procedure is then the same as in an ordinary squeeze job. The pressure is released and, in the case of a retainer job, the tubing is backed off, and the excess cement then washed out. The use of gel-forming cements is increasing materially the success of squeeze cementing in the East Texas field.

The area of the East Texas field is so tremendous, and sand conditions throughout the field and completion methods so variable, that it is really difficult to arrive at a fair conclusion as to the results that have been obtained from plug-back methods. Some operators report very disappointing results, whereas others have been quite successful. In many of the wells the casing is in such poor condition that maximum squeeze pressures of 3000 pounds per square inch, or greater, cannot be applied safely. The consensus seems to be that high maximum squeeze-pressure methods are necessary when a large percentage of water is being produced; but if only a small percentage of water is coming into the wells, some of the low-pressure plug-back methods may give good results. Maximum squeeze pressures of as high as 5000 pounds per square inch recently have been employed, and are reported to have given much

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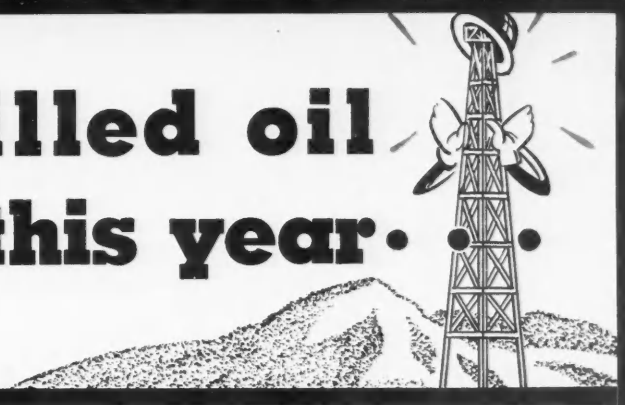

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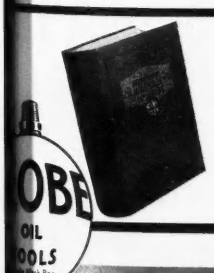

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better results than the lower pressures formerly used. Large quantities of cement usually are required; and even then in quite a few instances several hundred sacks of cement have been pumped in without building up the desired maximum squeeze pressure. There is a strong suspicion that in some instances much of this excessive quantity of cement may be escaping up on the outside of the production string of casing due to defective original cementing practice. In any event, the quantity of cement used seems to be unimportant compared with the pressure at which it is forced into the formation.

It can be stated with all certainty that there is no one method for the exclusion of water in the East Texas field which will give satisfactory results in all cases. It is undoubtedly true that improved cements, cement retainers, and the application of squeeze cementing have resulted in successful re-completions when failures otherwise would have occurred. The fact remains, however, that the probability of a successful shut-off does not appear at the present time to be more than 50 percent. Out of 13 companies contacted for information on this subject, 3 had had entirely successful results; 2 had had 50 percent successful jobs; 4 had had varying degrees of success, with the greater percentage on the failure side; and 4 had not done sufficient work to judge as to how successful plug-back methods might be.

In the opinion of many operators and competent engineers the cementing of a short string, followed by squeezing with a special tool to keep the pressure off the casing, as described in group 4, *type 3*, has decided merit. This method will permit the use of high pressures in wells in which the casing is light or otherwise defective, and in which even normal squeeze pressures might result in a collapse of the pipe in the hole. Use of electrical logs is most helpful in determining the exact oil-water contact before reworking operations are commenced. It is contended also by various authorities that a greater ultimate recovery will result from the use of a short-string squeeze job; because trapped oil, which would be lost under any other method, is likely to be recovered. If the casing were set entirely through the sand and originally gun-perforated only in the lower part, the same results would be obtained.

The question, of course, may be raised as to just what constitutes a successful water shut-off job. There can be only two ways of measuring the success of such work, viz., a decrease in the amount of water production from a well which has been re-worked, or an increase in oil production. In the first instance the cost of operation of the particular well in question might be excessive, due either to the inability of storing salt water or to the actual cost of disposal—even though the well might be making its allowable quantity of oil. After the well has been worked over, and if the anticipated results of a decrease in water production are a reality, the job is considered successful. In the second instance many wells are unable to make their allowable oil production because of excessive amounts of salt water; and if this situation can be remedied and, as a result, an increase in oil production sufficient to meet the allowable requirements is obtained, the job is considered successful.

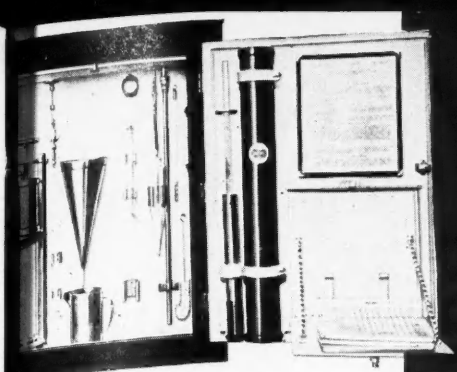
A third factor, which has an important bearing upon the success or failure of a job of this kind, is that of the permanency of either the water reduction or the increased oil production. Naturally, either a decrease in water production or an increase in oil production must be maintained over a sufficient length of time not only to pay for the job itself, but also to show some profit thereafter through either additional production or decreased salt-water-disposal costs.

Upon investigation a half dozen or more operators report an average cost of $1,360 per well for water-shut-off work. From the information that has been obtained, it may be expected that success may be regarded as being 50 percent. This, then, means that $2,720 must be allocated to the cost of every job in the calculation of pay-outs. At a production of 15 barrels of oil per day, this cost requires that 6 months' extra production must be obtained from each well successfully re-completed to pay for the work out of the oil. At a salt-water-disposal cost per barrel of ¼ cent (which figure might be low) this means that the water production of a well which is declared to be a success must be reduced approximately 109,000 barrels during the future life of the well. On the presumption that the water production of a well has been reduced 200 barrels per day as a successful shut-off, this advantage must be maintained for a period of a year and a half to make the

TABLE 8
Some Results of Plug-back Operations in the East Texas Field

Sand Penetration (Inches)	Maximum Squeeze Pressure (Lb. Per Sq. In.)	Date of Plug-back	Cement		Water		
			Sacks Used	Sacks Into Formation	Before (Percent)	After (Percent)	January, 1939 (Percent)
10	3,500[1]	3/38	300	279	60	45	95
8	3,400[1]	3/38	144	33	80	43	75
13	1,200[1]	2/38	300	280	80	2	60
2	3,000[1]	12/37	150	35	80	35	70
23	[1]	11/38	300	...	70	0	0
15	Dump bailer	11/38	...	...	33	0	0
6	Dump bailer	11/38	...	...	9	0	0
15	Dump bailer	12/38	...	...	20	0	0
10	Dump bailer	8/35	...	...	86	0	20
3	Dump bailer	8/35	...	...	35	35	67
15	500[2]	.....	15	...	20	0	..
14	500[2]	.....	15	6.5	90	Trace	..
9	600[2]	.....	15	...	20	0	..
30	600[2]	.....	20	...	20	0	..
8	650[2]	.....	25	...	20	18	..
15	Dump bailer	.....	25	...	20	1.2	..
5	600	.....	15	...	12	0	..
4	600[3]	.....	15	...	10	0	..
4	2,900[1]	.....	100	...	10	0	..
33	1,000[3]	.....	25	...	50	0	..
12.5	2,950[1]	.....	200	...	18	0	..

[1] Squeeze with retainer set in casing.
[2] Squeeze by bradenhead method with retainer set in casing.
[3] Squeeze through gun perforations with retainer set in casing.



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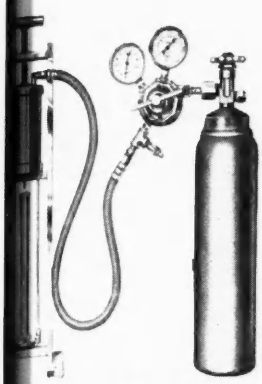

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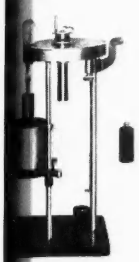

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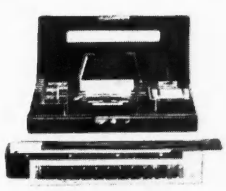

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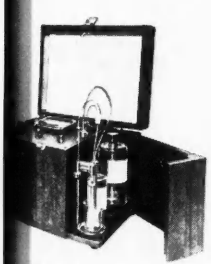

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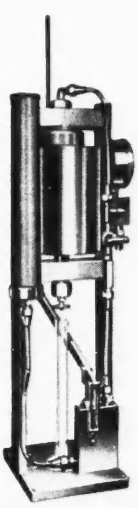

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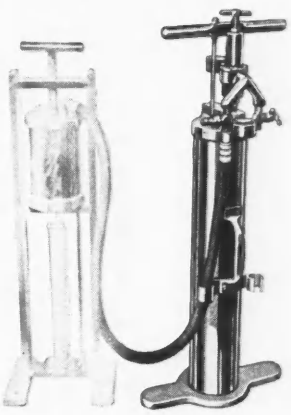
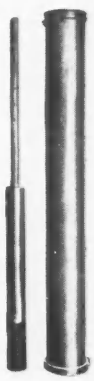
Measuring Cup



Baroid Pressure Pump



Mudwate Hydrometer

Hamilton Beach Mixer

Marsh Funnel Viscosimeter

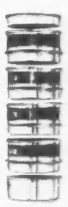


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TABLE 9

Comparison of Well Completions in the East Texas Field in which Casing is Set through a Greater Part of the Sand, and in which Casing is Set at the Top of the Sand

LEASE	Well	Initial Production (Barrels per Hour)	Sand Thickness (Feet)	Sand Section Exposed (Feet)
A	A	59.95	72	18
	B	69.43	70	70
B	A	46.03	32	10
	B	60.88	45	45
C	A	52.80	80	14
	B	60.00	100	100
D	A	37.85	72	8
	B	57.00	84	84

operation pay for itself from the saving incurred through lack of cost of salt-water disposal.

Very likely the presumption that the re-working of wells having a salt-water production under 80 percent is more generally a success, and that on wells making 80 percent or more is more generally a failure, is not far from correct. It is appreciated, of course, that many successful jobs have been done on wells making very high percentages of water, but certainly these jobs are the exception rather than the rule.

Upon summarizing the water-production history of the field for the last 18 months, it has been found that only a small number of wells contribute the greatest percentage of water. Eighteen months ago 9 percent of the wells made 68 percent of the water. A year ago 11 percent of the wells made 73 percent of the water. Six months ago 15 percent of the wells made 79 percent of the water. All of these wells had water percentages of 80 percent or more. From the foregoing it would appear likely that, notwithstanding the degree of success that may be obtained in the use of various re-working methods, there probably will be no appreciable decrease in the total daily water production of the East Texas field.

The general consensus seems to be that squeeze cementing or other forms of plug-back methods in thin sand sections will not yield satisfactory results—the reason for this probably being that a greater part of the oil content of the thin sand sections has been depleted, leaving nothing but water remaining. The same conclusion may be drawn for wells in which there has been only a shallow penetration of the sand. If the water has advanced up to near the top of the sand, little additional oil may be hoped for; and, under such conditions, the cost of a work-over job may never be returned.

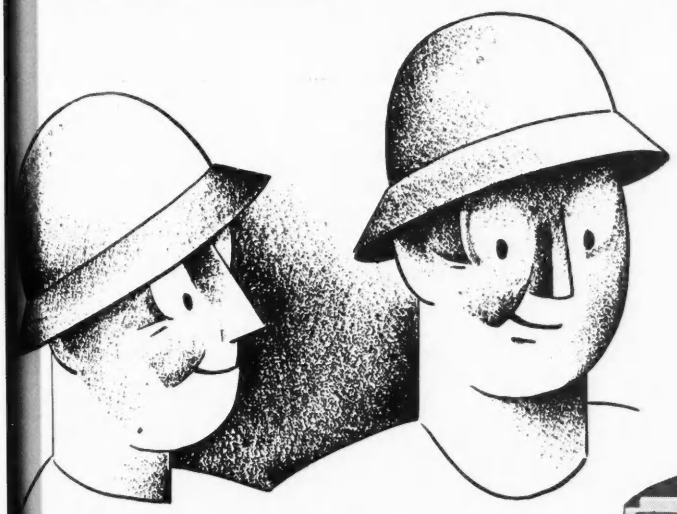
As an example of some of the results that have been obtained, the records of several work-over jobs are listed in Table 8.

The re-completion records listed in Table 8 may not be regarded as being exactly representative of the field as a whole, because actually the percentage of failures is somewhat greater than this table would indicate. It is interesting to note that the dump-bailer method of plug-back apparently has given better results than squeeze cementing; but it should be kept in mind that, owing to the large size of the field with varying conditions throughout, and to the large number of plug-backs that have been attempted, it is really difficult to make a fair comparison. Other factors which also will enter into a fair appraisal of the results of plug-back work, other than the physical conditions in the sand previously referred to, are, of course, the density of drilling in the area affected by water, the past rate of production, and the total recovery that has been obtained. To establish all of these facts would involve an investigation of great magnitude, and one that would be far beyond the possible scope of this paper.

One original completion method that has been employed in the East Texas field, which may assist materially in controlling water production, is the setting and cementing of the casing through the upper 80 to 90 percent of the sand—leaving only a small part of the lower section exposed. A comparison of this method with conventionally-completed wells is given in Table 9.

Although producing from the restricted lower part of the sand does have a diminishing effect on the potential production, this is not a matter of consequence if the hourly potential far exceeds the daily allowable. It is believed that when the lower part of the sand, in the low-casing wells, is flooded by encroaching water, the wells then can be plugged back, and the casing perforated in the upper part of the sand—permitting continued oil production, with little water. This method may eliminate the troubles encountered in squeezing in open holes when the casing has been set at the top of the sand, and when it has proved to be difficult to build up an adequate pressure on the cement retainer.

"Well doggone, that sure is a clever device"



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WORLD DEVELOPMENT and TECHNOLOGY

Edited by
WM. V. GROSS, Associate Editor

Mexican Review

Oil workers may force government's hand with demand for indemnity or direction of oil industry.

Recent action of convention of the Mexican Oil Workers' Union, that convened in special session in Mexico City June 1, in naming committees to inquire into what has been done relative to payment of indemnities claimed by the workers, and to ascertain just what status the government petroleum administration holds, is interpreted by well-informed observers in the national capital as preparatory step in plan of the workers to propose that the government turn over to them entire control and operation of the Mexican oil industry.

The question of indemnity payments is a hangover from those hectic days just prior to expropriation. Following refusal of the companies to accept the award by the labor board December 18, 1937, of an annual increase in wages and benefits to the workers of 26,329,393 pesos, the board on March 17, 1938, the day prior to President Layaro Cardenas' expropriatory decree, declared the labor contract between the oil workers and the companies terminated. Under Mexican law, the workers, with the breaking of the contract, became eligible to receive three months pay, plus 20 days pay for each year of service.

These indemnity payments, which it is estimated total approximately 130,000,000 pesos ($26,000,000) for the 15,000 workers of the industry, have never been made.

The workers, who have not given up their claim to the indemnity payments, hold that in acquiring the oil properties the government also acquired the liability represented by the unpaid indemnities. Accordingly, in order to get down to brass tacks in the matter, the Oil Workers' Union convention named the committee to ascertain what steps, if any, have been taken to "liquidate" the claim and report back to the convention.

The object of the other committee—instructed to determine if the current government petroleum administration holds the status of a state agency or that of any other employer—is to clarify the status of the workers, informed sources say, prior to furthering their demands for payment in full of the annual wage and benefit increases represented by the labor board award that the companies found they could not accept.

The government petroleum administration is made up at present of two major divisions, the production branch of which Vicente Cortes Herrera is chief, and the distribution or sales division, of which Jesus Silva Herzog is the head. The administration functions as an autonomous department and has a board of directors with representation from governmental and union circles. Actual operation of the industry in the field and at the refineries, however, the workers union contends, is carried on by the workers themselves.

Turn Over to Workers

As seen by sources in close touch with the politics of the situation, the case being built up by the workers on which to predicate their request for entire control of the industry, includes the following possible points:

If it is found (as undoubtedly it will be at this time) that the government is unable or unwilling to make the 130,000,000 pesos indemnity payment, the workers will be in a favorable position to ask that complete direction of an enterprise against which they have such a material claim be turned over to them.

If it is found that the petroleum administration is an actual state agency, request of the workers that the industry be turned over to them so they may retain their trade union status rather than be classed as government employes will be supported by precedent set in the case of the railroad workers.

If it is found that the petroleum administration has the legal status of a general commercial enterprise, the workers will find support for their request for control of the industry on the ground that they are working for an employing agency of "capitalistic" tendencies.

The findings of the two committees mentioned and subsequent action by the convention upon their reports are being awaited with much interest not only in oil but other industrial and business circles.

The Ciudad Madero Refinery "Sabotage"

The question of alleged "sabotage" at the Ciudad Madero (formerly Aguila) refinery in the Tampico area has created considerable stir in oil circles and elicited from President Cardenas a vigorous rebuke, addressed to the Oil Workers' Union convention, of the acts of the workers concerned. The convention named a special commission to investigate the situation at Tampico and the Confederation of Mexican Workers, with which the workers concerned are affiliated, dispatched a special investigating commission to make a probe of the affair.

Adding to the furore created was the public statement made by the directors of Petroleos Mejicanos, and Distribuidora de Petroleos Mejicanos, production and distribution agencies of the national petroleum administration, and carried in the Mexico City press, in which it was charged that the foreign oil companies whose properties were expropriated had "instigated" the "sabotage" charged. This statement appeared under date of June 7.

Under date of June 9, the Aguila, Huasteca, California Standard Oil Company of Mexico and Richmond Petroleum Company of Mexico addressed a joint statement to the newspapers that carried the government agencies' charge in which the companies, among other things said: "Having regard to the origin of these declarations, the undersigned petroleum companies cannot let them pass unanswered and they therefore declare both individually and collectively that they energetically deny the said accusations as absolutely false."

The situation in question was brought on by a brief sit-down strike early in June by boiler crews at the Tampico refinery in protest against the laying off of 90 of the refinery workers and over question of wage adjustments and other grievances. Considerable damage was caused by the shut-down of the boilers through carbonizing of the flow pipes in the cracking plant heaters and reaction chambers. Damage was estimated at possibly 150,000 pesos ($30,000), and refinery production was cut from 45,000 to 30,000 barrels daily temporarily.

The petroleum administration bluntly laid the blame at the door of "the campaign of intrigue and aggression" which it charged the oil companies have

been carrying on since the expropriation.

From Vicam, in the state of Sonora, President Cardenas dispatched his critical message to the convention of the Oil Workers' Union denouncing the refinery strike as an "unpatriotic act of sabotage" and asking the convention to take the "necessary disciplinary measures to prevent any repetition of such shameful occurrences."

The reply of the convention was to order probe of the Tampico situation, and the Oil Workers' Union issued a circular to all its sections advising that the convention "reproves and condemns any violent attitude adopted by the sections which results in stoppages or strikes."

Salvage Company Taken Over

Reports of the taking over by the government through the Federal Labor Board of the Petrolera Imperial, oil equipment salvage company, with Tampico loading terminal and warehouse facilities, made Mexico City newspaper headlines recently. This action, it was said, was to satisfy payment of 700,000 pesos back pay claimed by the workers. Embargo was filed against the company, a Katz enterprise, by a group of employes the past February on the ground that the company was an oil company and therefore subject to increased salary schedule as provided by the labor board award that preceded expropriation of the foreign companies.

May Export Shipments

Exports of Mexican crude during May totaled 1,469,050 barrels, summary of petroleum exports for the month shows. Davis and Company, Inc., New York, was the largest taker, moving 710,300 barrels. Final destination of the Davis shipments was not given.

Other exporters of crude for the month, with their takings were: Azienda Generale Italiana Petroli, S.A., 404,100 barrels, all destined for Italy; Eastern States Petroleum Company, 383,950 barrels, for Houston; Socony-Vacuum Oil Company, 70,700 barrels, for Providence, Rhode Island.

Other exports included: asphalt, 3300 metric tons; fuel oil, 102,100 barrels; gasoline, 80,000 barrels; gas oil, 109,330 barrels; gas oil for ship's bunkers, 10,000 barrels; fuel oil for ship's bunkers, 82,900 barrels.

The value of the May exports totaled more than $1,558,200.

Total value of petroleum exports since March 19, 1938, date of the taking over by the government of the foreign-owned oil properties, is placed at nearly $17,000,000. These included: crude oil, 8,153,700 barrels; asphalt, 69,600 metric tons; fuel oil, 2,543,500 barrels; gasoline, 2,441,600 barrels; gas oil, 2,964,000 barrels; gas oil for ship's bunkers, 150,000 barrels; fuel oil for ship's bunkers, 665,500 barrels.

Pemex drilling concession to English firm causes union row

The Mexican oil-workers union last week adopted a militant attitude toward Petroleos Mejicanos, government subsidized oil company, for its action in awarding to Dalson & Company, an English drilling firm, a $900,000 contract for the drilling of 10 wells in the Poza Rica field. The union's chief objection, as expressed at a national convention in Mexico City last week, was to the clause which allowed the drilling firm to discharge workers at will. Latest development was a request from several sections of the union that a delegation be sent to Sonora to place the matter before President Cardenas. Contention also resulted because the price for the drilling of each well, $90,000, included only labor costs, with the government furnishing materials, machinery, and shops, was represented as being five times the fair price for such work.

Oil reported found in Nottinghamshire, England

Anglo - Iranian Oil Company announced last week that its prospecting subsidiary, D'Arcy Exploration Company, has struck oil in a test near Bilsthorpe, Nottinghamshire, at 1914 feet. The well is now being prepared for production tests.

Work was begun in November last, and the company did not expect to strike oil until at least 3000 feet had been reached.

Two or three weeks will elapse before it is known whether oil exists in commercial quantities, but it is stated that the quality is satisfactory.

It has long been recognized that there is oil in this part of the country, some of it of very good quality. The quantities have been regarded, however, as too small to be worth working. Of the present site geological experts and petroleum technologists are optimistic. The site is near the village of Eakring, which until a few months ago formed part of the Rufford estate of Lord Savile. The estate was sold a few months ago to Sir Albert Ball, formerly Lord Mayor of Nottingham, who disposed of the greater part of it by auction. He withdrew about 60 acres in this neighborhood, however, so that drilling might take place.

To Egypt

TRAVIS COGGIN

formerly with Standard Oil Company of Argentina, was in Houston last week enroute to Egypt, where he will be drilling superintendent for Standard Oil Company of Egypt.

Hull and Richberg confer on expropriation adjustment

Cordell Hull, Secretary of State, and Donald Richberg, representative of American and British oil companies expropriated in Mexico, held a series of conferences last week to discuss ways and means of effecting a return of the confiscated oil lands. Results of the conferences were unannounced.

Ramon Beteta, Mexican foreign undersecretary, also conferred with Hull and Undersecretary Welles on June 20. Beteta emerged from the meeting holding forth high hopes that the dispute would soon be settled and announced that he was returning to Mexico City optimistic that some way would be found to reconcile the various conflicting interests. Hull remarked that he and Beteta had only discussed the question casually and had made no attempt to go into detail or make decisions. Some observers commented that the chief object of Beteta's Washington visit was the repatriation of Mexicans who have been living in the United States and had so little connection with the expropriation question that Beteta's optimism might be construed as Latin amiability and nothing else.

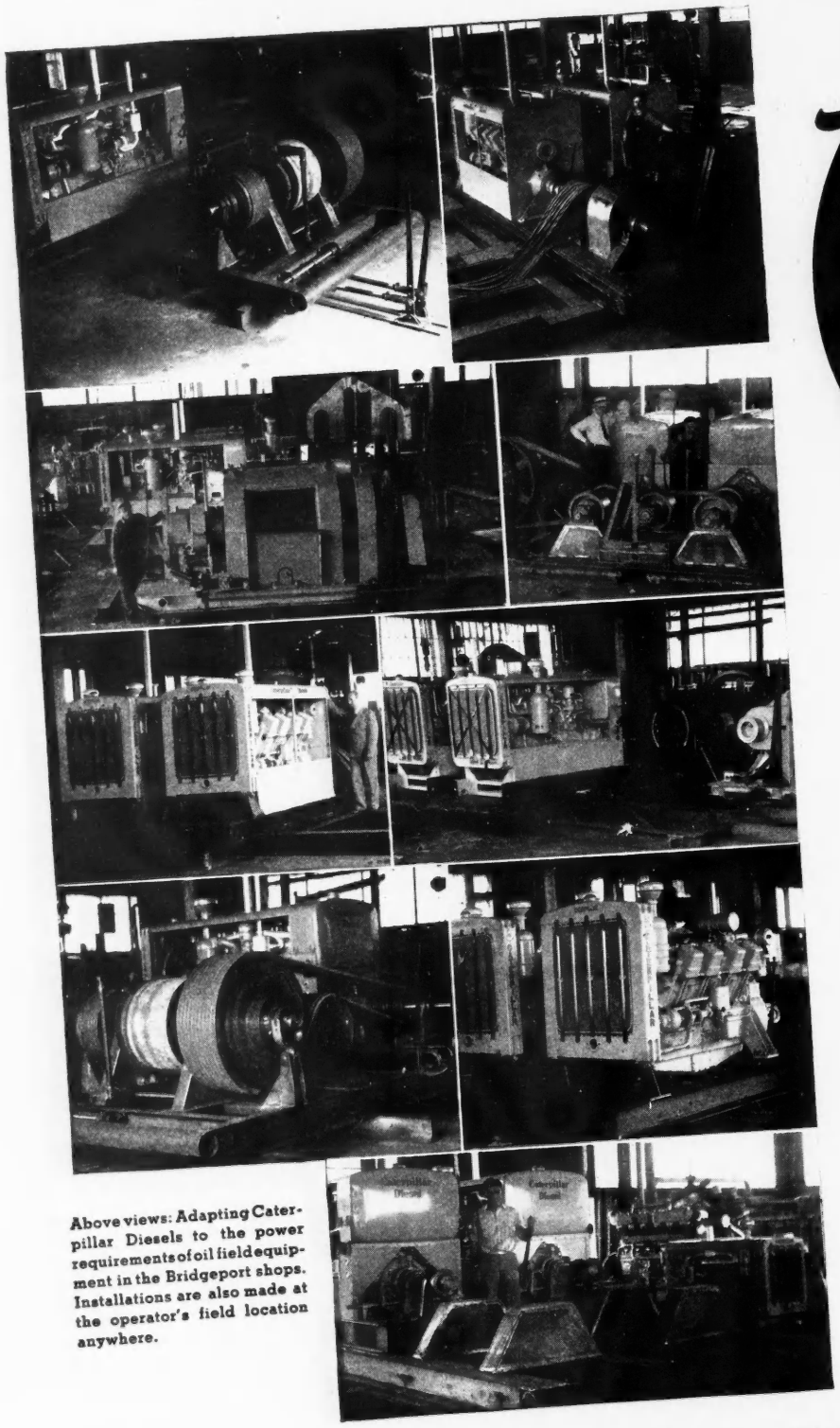
Shell produces 10.5 percent of world's total in 1938

The Royal Dutch oil combine was responsible for 10.5 percent of the world's total output of crude oil, according to the recently released annual statement of that company. Royal Dutch and its subsidiaries produced 29,924,381 metric tons during the year, while 280,276,000 metric tons were produced in the world. World production dropped 2.34 percent from the 1937 total, while Royal Dutch Group output declined 6.47 percent due entirely to increased restriction in the United States, exclusion from Mexico, and dearth of new discoveries in Roumania. With the exception of these three countries Royal Dutch recorded output rises in all of the 12 countries in which it operates. Comparison of Royal Dutch production with total production for each of these countries for 1938 is given below. Production in metric tons:

	Royal Dutch Group	Total	Royal Dutch as % of Total
Netherlands Indies	5,407,164	7,394,000	7.3
Sarawak, Borneo	207,000	Total Borneo below	
Brunei, Borneo	707,000	914,000	100.0
Egypt	226,000	226,000	100.0
Roumania	1,514,872	6,871,000	22.0
Mexico	953,921	5,523,000	17.2
Venezuela	11,309,633	28,107,000	40.0
Trinidad	386,543	2,583,000	15.2
United States	7,680,203	170,432,000	4.5
Argentina	544,460	2,425,000	22.4
Iraq	978,146	4,368,000	22.4
German Reich	9,439	609,000	1.5

Italian gasoline output gains

Italy's production of gasoline in the first 5 months of this year totaled 3524 metric tons, or 24,668 barrels, up 40 percent over the corresponding period of 1938.



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MEN IN THE INDUSTRY'S NEWS

J. L. LATIMER, vice president and manager of Magnolia Pipe Line Company, Dallas, spent the fore part of last week in Illinois and Indiana inspecting construction work on the 355-mile 10-inch crude line being built by the company for its parent organization, the Socony-Vacuum Oil Company. The carrier will serve oil fields in the Illinois Basin, and also will handle oil from the Mid-Continent.

HENRY ZWEIFEL, Fort Worth attorney and oil operator who succeeded Josh S. Cosden as president of Cosden Petroleum Corporation, last year, was re-elected at the annual meeting of the board of directors held early last week.

ROBERT E. (BOB) ALLEN has resigned his duties as assistant to the president of A. O. Smith Corporation in order to resume a more active interest in the oil business of California. Before joining A. O. Smith Corporation, Allen was assistant oil umpire and executive secretary of the central committee of California Oil Producers.

P. F. DOUGHERTY, of Sun Oil Company's technical department in Philadelphia, was a visitor in the company's Dallas office last week.

HUGH SCOTT, St. Louis, is president of Oil Production Corporation which was granted an Illinois charter last week. Offices have been established in the Metropolitan Building, Centralia.

FRED B. ASCHE, W. F. Bowman and Mildred L. Smith last week organized Cinta Oil Company as a Texas corporation. Headquarters have been established in Houston.

D. R. LAUCK, Wichita operator, was host at his farm to members of the Petroleum Accountants Society of Kansas last week during the organization's annual summer picnic. I. A. Lange, of Pryor & Lockhart, Inc., was in charge of arrangements.

J. V. FORT, Washington, field representative of the Independent Petroleum Association of America, declared that regulatory oil legislation for Illinois "is absolutely necessary at this time" when addressing 40 oil men of Mattoon and vicinity last week.

DR. C. W. TOMLINSON, consulting geologist of Ardmore, Oklahoma, discussed the geology of north Texas and southern Oklahoma before a meeting of Dallas petroleum geologists last week.

DR. G. S. HUME, of the Canadian geological survey, arrived in Calgary, Alberta, last week preparatory to undertaking a survey in the foothills area of the west Canadian province heretofore not reported on by the Dominion government.

FRANCIS F. REEVE, Calgary, was re-elected president of Commoil, Ltd., when shareholders of the Alberta operating company held their annual meeting in Calgary last week. Other officers named were A. B. MacKay, vice president; G. J. McKay, secretary-treasurer, and Dr. W. E. Spankie and G. T. Wright, directors.

H. B. FELL, executive vice president of the Independent Petroleum Association of America, in his annual report "to Michigan on the state of the nation," said the "Illinois situation is to be regretted but it is not hopeless." Fell was the chief speaker at the Oil and Gas Association of Michigan's banquet at Mt. Pleasant.

"The present production in Illinois can be absorbed without seriously upsetting price or balance and demand structures," he said.

"Honest Abe" An Oil Gauger

William Camp, at 34, is the young "Mr. Lincoln" of the Huntington Beach oil field in California. Camp, who is a gauger employed by Union Oil Company, allowed his beard to grow for a recent old-timers fiesta with results that are apparent in the photograph.

EUGENE HOLMAN, New York, vice president in charge of all producing subsidiaries of the Standard Oil Company of New Jersey, toured the Illinois oil fields with Carter Oil Company officials last week. Accompanying him were J. J. Conry, president of Carter Oil Company; L. F. McCullom, vice president; Ivan Salnikow, chief engineer; Herbert Miller, head of the marketing department, all of Tulsa; William Watkins, Illinois division superintendent; Ralph Damp, assistant division superintendent; M. W. Fuller, exploration department manager, and Robert Sullivan, eastern division engineer, all of Mattoon, and Duane C. Randall, district geologist, St. Elmo.

HERMAN STABLER, Washington, chief of the conservation division of the United States Geological Survey, is visiting in the Mid-Continent.

S. F. SHAW, consulting engineer for Anglo-Canadian Oil Company, Ltd., arrived in Calgary last week. He plans to remain in Alberta for about three weeks.

Z. E. MARVIN, SR., R. H. Henderson and C. R. Inman last week organized the Marvin-Henderson Oil Corporation as a Texas corporation with headquarters in Dallas.

GEORGE SOWDEN, Houston oil man, has left for a swing around the "fair circuit," going first to New York, then to the San Francisco fair before returning to Houston.

J. B. GARRETT, of Stanolind Oil & Gas Company, Houston, discussed "Some Middle Tertiary Smaller Foraminifera from Sub-surface Beds of Jefferson County" at the weekly meeting of the Houston Geological Society on June 22.

DONALD W. GRAVELL and MARCUS A. HANNA, Gulf Oil Corporation, collaborated in a discussion of "Some New Species of Larger Foraminifera from the Claiborne of Mississippi" at the weekly luncheon of the Houston Geological Society on June 22.

DIED:

E. L. LANDRETH, 53, superintendent of operations in the Gulf Coast for Landreth Production Corporation, died June 15 of a heart attack at his Corpus Christi residence. The body was forwarded to Joplin, Missouri, where the deceased formerly resided, for burial. Survivors include his widow; three brothers, Ed. A. Landreth, Fort Worth, J. P. Landreth, Chicago, and H. H. Landreth, Joplin; and two sisters.

LUTHER A. SADLER, assistant deputy oil and gas supervisor of the Texas Railroad Commission, died June 19 at his Abilene, Texas, residence following a heart attack.

W. B. CONOVER, 67, oil operator of Lake Charles, Louisiana, died at his home June 15 following a lengthy illness.

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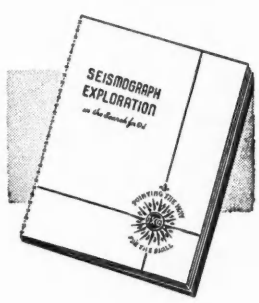

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THE WEEK'S NEWS SUMMARIZED

Allowables

Texas' daily allowable production during July will be 1,362,158 barrels, or 31,876 barrels higher than on June 12. Despite the increase, the state's allowed output is still lower than the Bureau of Mines estimated market demand for oil from Texas. The order was for a 90-day period, despite the protest of Commissioner Jerry Sadler. It provided for a continuance of the production holidays, eight shutdowns being required for each of the three months. The East Texas proration method was left unchanged at 2.32 percent of the hourly potential of all wells, despite the recent federal district court ruling that the procedure was confiscatory and therefore invalid because it did not consider acreage as a factor. The order, however, did exempt the Todd B lease of Rowan and Nichols Oil Company in compliance with the court order. Several other large acreage holders had requested higher allowables because of the court decision, but the commission made no note of them, although later in the week it was announced the commission would hold a hearing on the requests. If the pleads for higher allowables, from 20 to 40 barrels, are granted it would mean a material hike in the output of the field, as the three concerns petitioning such action are among the largest well owners.

Indications were that opponents of state oil control in California had not given up their fight, although such a measure has been passed by the legislature and is slated to be signed by Governor Olson. It is possible an attempt will be made through a referendum to have the question voted upon at the next election. Meanwhile, the state's voluntary proration efforts continued, with the Central Committee of California Oil Producers fixing the July allowable at 595,000 barrels as compared with 588,200 barrels in June.

With California soon to have an oil control law, Illinois is the only important producing area without state regulations. Last week, two independent operators asked that conservation measures be adopted to curb the wanton waste now existing in the area, and a state solon introduced a measure providing for a study of proration effects in other states.

Meanwhile, a hearing held on Michigan's recently issued first proration order, which provided for an allowable of 200 barrels per well on a 10-acre unit for five fields in the southwestern part of the state and a 125-barrel flat allowable for 10-acre units in the Temple field, developed little protest and is due to be made a permanent order for an indefinite period.

Legislation

After a two-hour debate, in which the bill was alternately attacked as monopolistic and price fixing and defended as an essential step in the conservation of petroleum, the House of Representatives on June 20 voted to extend the Connally hot oil act for a period of three years. Because the Senate previously voted to make the legislation permanent, the bill was sent to conference, but it is expected that the Senate will accept the House amendment for the three-year period.

The House of Representatives during the week also passed the tax revision bill, continuing oil and other nuisance taxes until June 30, 1941. This measure has not yet been voted upon by the Senate.

For the first time since divorce legislation has been pending in Congress, integrated company executives turned out in number last week to explain their side of the controversy to the House Judiciary Subcommittee. They leveled a vigorous attack against the Harrington Bill to divorce marketing from other branches of the industry, declaring the nation's oil business would be destroyed without providing any offsetting advantages to the consumer.

Statistics

Although crude production rose 70,100 barrels to 3,447,050 barrels during the week for which latest statistics are available, the producing branch remained in good statistical position as continued heavy runs to stills caused crude stocks to be lowered by the unusually large amount of 3,255,000 barrels. However, the refined branch was not improved similarly. Crude runs to stills, although down 30,000 barrels, were still high, with the result only 59,000 barrels were taken from gasoline stocks when substantial withdrawals are normal at this time of the year.

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Allowable Picture

Texas continues its strict control by production holidays . . . Bureau forecasts a sharp increase in July demand will nearly equal all-time level

Texas issues 90-day proration order

In a very important order, the Texas Railroad Commission last week fixed the state's allowable production effective July 1 at 1,362,158 barrels daily, 31,876 barrels higher than on June 12. However, the new allowable is still below the Bureau of Mines estimate of market demand for Texas oil.

Besides indicating that the largest producing state would continue to curb its output drastically, there were several other points of significance, including (1) the order was for a 90-day period, (2) production shutdowns were provided for in a supplement order on 8 days during each month of the 3 month period, and (3) the East Texas field was left unchanged, with the exception of compliance with the court order on the Todd lease of Rowan & Nichols Oil Company, despite appeal of several large lease owners that they be given higher allowables.

Since both July and August are months of 31 days, they will have one more producing day than in May under provisions for 8 production holidays. Shutdowns were ordered for the following days: July 1, 2, 8, 9, 15, 16, 22 and 23; August 5, 6, 12, 13, 19, 20, 26 and 27; September 2, 3, 9, 10, 16, 17, 23 and 24.

The commission exempted from the Saturday and Sunday shutdowns the following fields: Rodessa, Eckert, Minerva-Rockdale, Somerset, Mission River, Barbers Hill, Boling, Goose Creek, Hamman (deep), High Island, Hitchcock, Old Hull, New Hull, Lochridge, New Mykawa, Old Ocean, West Columbia, New West Columbia, Charamousca, Midway, Corsicana, Currie, Mexia, Powell, Richland, Wortham, Wortham (shallow), Big Lake, McMullen, World, Eaves, Garza, Hendricks, Leck, Shearer, Taylor-Link and Tobarg. These fields are expected to account for 1,073,688 barrels by being exempted due to water encroachment, etc. In May total exemptions during the month amounted to 1,363,872 barrels.

In compliance with the federal district court order in the Rowan & Nichols Oil Company suit (see THE OIL WEEKLY, June 19, 1939, page 42) the Todd "B" lease of Rowan & Nichols was exempted from the order. The remainder of the field is to continue to produce on 2.32 percent of the hourly potential of all wells, despite the court's ruling that the method of applying proration in East Texas was invalid as its failure to consider acreage was confiscatory.

The total basic allowable for the field is 1,789,270 barrels, which is 34,243 barrels higher than the basic allowable on June 12, when the statewide proration hearing was held.

The commission was requested by 3 large well owners in the East Texas field to increase their allowable from 20 to 40 barrels per day a well on the basis of the Rowan & Nichols suit decision. Since these exemptions were not included in the order, this was taken in some quarters as a denial on the part of the commission, but later Commissioner Chairman Lon A. Smith announced he was awaiting the return of other commissioners before conferring on the requests. Companies asking for higher allowables were Humble Oil & Refining Company, Magnolia Petroleum Company and Sun Oil Company. Since these 3 concerns have more than 4750 wells in the field, the granting of the petitions would cause a large upturn in East Texas production.

However, Railroad Commissioner Jerry Sadler has indicated he has no intention of granting immediately the requests for allowable adjustments in East Texas.

The order was signed by only two commissioners, Lon A. Smith and Ernest O. Thompson. Commissioner Jerry Sadler, who earlier in the month had declared he would not sign any order covering a period longer than 30 days, however, was out of the city at the time the order was signed. Therefore, the lack of his signature may not be significant.

Comparison of Texas Allowable for June and July

	June†	July
Basic Daily Allowable	1,752,027	1,789,270
Number Producing Days Allowed During Month	22	23
Total Monthly Basic Allowable	38,544,594	41,153,210
Exemptions Granted to Shutdowns	1,363,872	1,073,688
Total Allowable Production for Month	39,908,466	42,226,898
Net Average Daily Allowable for Month*	1,330,282	1,362,158

* Net Average Daily Allowable for June figured for 30 days and for July on a 31 day basis.
† June figures as of June 12, and those for July as of July 1.

Texas Basic Allowable Trends By Districts

DISTRICT	Basic Allowable, 5-1-39	Basic Allowable, 6-1-39	Basic Allowable, 6-12-39	Basic Allowable, 7-1-39
1 Southwest Texas	38,434	39,030	38,469	38,618
2 Southwest Texas	64,312	68,160	68,387	69,492
3 Gulf Coast	261,475	271,828	273,155	282,423
4 Southwest Texas	188,918	200,757	200,755	199,564
5 East Central Texas	30,574	30,736	30,794	30,766
6 East Central Texas	82,148	80,903	83,004	88,864
6 East Texas Field	522,450	522,632	522,718	522,668
7-B West Central Texas	36,845	38,050	37,927	37,804
7-C West Central Texas	27,525	27,796	30,880	29,427
8 West Texas	240,328	248,465	252,164	271,798
9 North Texas	118,850	122,457	123,820	127,820
10 Panhandle	89,192	89,762	89,954	90,026
Total	1,701,051	1,740,576	1,752,027	1,789,270

Bureau sees need for 3,513,000 barrels daily

Domestic demand for oil products during July will require an average daily production of 3,513,000 barrels of crude during the month, it was forecast June 23 by the Bureau of Mines.

The highest figure ever forecast by the bureau with the exception of that for October, 1937, the July figure represents an increase of 22,200 barrels, or one percent, over June and is two percent above the actual demand of 3,319,000 barrels of July, 1938.

Runs to stills are estimated at 3,345,500 barrels daily, or 124,300 barrels above the actual daily average for last year, but the estimated foreign runs are more and exports are materially less.

Reviewing the situation, the bureau found that average crude-oil production and runs to stills during the five weeks April 29 to June 3 were 3,540,000 and 3,379,000 barrels, respectively, and that during that period total crude-oil stocks declined 1,375,000 barrels, while stocks of foreign oil increased 92,000 barrels, indicating a total decline of 1,467,000 barrels, equivalent to 42,000 barrels daily, in domestic stocks. The addition of this to production gives 3,582,000 barrels as the apparent daily average demand for the period, compared with the bureau's forecast of 3,425,200 barrels for May, but much of this apparent excess crude demand, it was explained, represents higher runs to stills than were estimated.

"All figures thus far available for the second quarter indicate that runs to stills have been at such a high level that adequate progress in the seasonal reduction of gasoline stocks has been retarded," it was commented.

The estimated domestic demand for motor fuel is 52,600,000 barrels, and while this is 11 percent greater than the abnormally low demand of last July, it is pointed out it does not amount to more than six percent increase over the estimated normal demand for that month.

The bureau estimates motor-fuel ex-

ports at 4,200,000 barrels or 100,000 barrels less than for June, and foresees a decrease of 6,000,000 barrels in stocks, pointing out that stocks of finished and unfinished gasoline on April 30 were 87,531,000 barrels and statistics of the American Petroleum Institute show a decline of approximately 2,850,000 barrels during May, bringing them to approximately 84,700,000 barrels at the close of that month. Benzol and direct sales of natural gasoline are estimated at one million barrels, making refinery production 49,800,000 barrels, to be distributed among the various districts as follows:

East Coast, 6,540,000 barrels; Appalachian, 1,840,000; Indiana-Illinois, 8,880,000; Oklahoma, 2,950,000; Kansas-Missouri, 2,460,000; Texas Inland, 3,620,000; Texas Gulf Coast, 13,260,000; Louisiana Gulf Coast, 1,520,000; Inland Louisiana-Arkansas, 960,000; Rocky Mountain, 1,260,000; California, 6,510,000 barrels.

Natural gasoline to be blended at refineries in July is estimated at 6.5 percent of the total production, or 3,240,000 barrels. The yield of straight-run and cracked gasoline is estimated as 44.9 percent, and the application of this yield to the production of 46,560,000 barrels gives crude runs of 103,710,000 barrels, or 3,345,500 barrels daily. The estimate for foreign crude runs has been raised to 3,000,000 barrels, 600,000 barrels above the June estimate.

Exports of crude are estimated at 6,400,000 barrels, 500,000 barrels above the June estimate but 850,000 barrels under actual shipments in July, 1938. The estimate for fuel and losses is 1,800,000 barrels.

The total demand for domestic crude oil for July is placed by the bureau at 108,910,000 barrels, or 3,513,200 barrels daily, distributed as follows: California, 595,200; Oklahoma, 465,100; Louisiana, 264,500; Illinois, 187,400; Kansas 160,300; New Mexico, 116,100; Wyoming, 73,200; Arkansas, 53,900; Michigan, 53,200; Pennsylvania, 50,800; Montana, 16,100; Kentucky, 15,900; New York, 15,400; Ohio, 10,500; West Virginia, 10,700; Colorado, 4800; Indiana, 2600.

Fight on California control act looms

Although the California oil control bill, already passed by the state legislature, is slated to be signed at an early date by Governor Olson, and thus become a law in 90 days, the measure is being fought by interests, principally independent operators. It now appears that an attempt will be made through a referendum to have the question voted upon at the next general election.

The step toward state control of oil production was made when the Senate voted 27 to 11 for its adoption. The bill provides that a commission of three will enforce production quotas. The three members will be the director of natural resources, the director of finance and the director of public works, all three being appointive offices, which brought forth considerable criticism.

There are also possibilities of legal attacks on the act, which might raise the question of whether the Senate followed legal procedure in passing the bill. Some are of the opinion the measure was not legally before the assembly, as it was taken up out of order.

California's voluntary proration to continue

Spiking all rumors to the effect that the oil curtailment program under the present voluntary setup is about to go smash, members of the Central Committee of California Oil Producers were informed last week by Lawrence Vander Leck, chairman, that efforts will continue to hold producers in line and that regardless of any control legislation now before Governor Olson, work along that line will not halt.

Vander Leck made it plain to members of the central committee that the group will remain neutral in so far as the Atkinson oil control bill is concerned and that there is lots of work to be done to aid the curtailment movement.

The central committee voted to increase the July quota for California over the past month. For July, producers were requested not to exceed a quota of 595,000 barrels daily. For June the quota was 588,200 barrels daily. The increase was necessary to care for new wells according to the allocation committee.

During the past 20 days California's production averaged 609,558 barrels daily, which represented a decline of 11,270 barrels over the corresponding period of a month ago. Present production is the lowest it has been in the state on an average in two years.

Due to the hundreds of wells that were slated for a demonstration test to determine their ability to produce, the central committee unanimously adopted a resolution to extend the time limit for the demonstration to November 1. A number of company representatives declared they were unable to get their tests completed in the 90-day period ending August 1 and requested that an additional 90 days be given.

Illinois solon suggests study of oil regulation

A study of the effects of proration in other states has been proposed in a bill introduced in the Illinois Senate. Senator Parrish of Centralia introduced the measure, which calls for an appropriation of $10,000. It would allow five members of the state senate to visit the oil country and make a report to succeeding sessions of the state assembly.

Michigan's first proration order stands after hearing

A flat allowable of 200 barrels per well on a 10-acre unit factor for five fields in Southwestern Michigan and a 125-barrel flat allowable for 10-acre units in the Temple field, Clare County, established in the first emergency order under the new oil conservation act, will be made a permanent order for an indefinite period.

P. J. Hoffmaster, supervisor of wells, and the advisory board, after further hearings last week, approved the schedule to the conservation commission for final action. Hoffmaster said testimony indicated that the 200-barrel order might be too high rather than too low to prevent waste but that it would be continued at the present time.

Little opposition was voiced by operators to the 200-barrel flat allowable.

Refiner and buyer representatives who protested the order at the first hearing offered no testimony at the second hearing last week. Off the record, however, they pointed out that the current market for Michigan crude oil is above the available supply. It was learned on good authority that two or more Michigan independent refiners are now negotiating with Illinois operators for purchase of crude. Illinois crude, it was admitted, would have to be purchased at the field around 70 to 90 cents to be competitive with Michigan at the present posted prices.

Oil at the Capitols

Oil leaders tell Congress marketing divorce would ruin industry . . . House votes Connally act three year extension, and to continue federal oil taxes

Heads of major firms attack divorcement

Top-flight executives of the oil industry last week leveled a vigorous attack against the Harrington bill to divorce the marketing of petroleum products from other branches of the industry, telling a House Judiciary Subcommittee that the measure would destroy the nation's oil business without offsetting advantages to the consumer.

For the first time since divorce legislation has been pending in Congress, integrated-company executives turned out in number to explain their side of the controversy with the independent marketers.

In a series of lengthy statements, they told the subcommittee that the arguments of the proponents of the bill were based on inaccuracies, misconceptions and misrepresentations.

Warning the subcommittee that public opinion would turn against any Congress which legislated disintegration of the oil industry and raised prices to the consumer, John A. Brown, president of Socony-Vacuum Company, first witness for the opposition, declared the Harrington bill was unjustified and unnecessary.

His company, Brown related, has

317,000 stockholders, in possession of its $125,000,000 of debentures, and 39,000 employees, all of whom would be seriously affected by disintegration of the company. On the other hand, he asserted, passage of the bill would not serve to restrain monopoly but, on the contrary, would restrain competition and increase monopolistic possibilities.

"This bill in effect makes the extraordinary proposal that a company producing or manufacturing a commodity should not be permitted to handle its sale to the retailer or the consumer," he contended. "Conversely, it would restrict the freedom of the consumer and the retail dealer by making it generally impracticable for them to buy directly from the manufacturer and forcing them to deal with a privileged class of middlemen, protected by law from competition.

"If it is a good principle for the oil industry that retail sellers and consumers must not buy from manufacturers unless they take title at the factory—and that manufacturers must not have warehouses or depots or make deliveries of products—then it ought to be true for all industries."

Under the bill, Brown pointed out, large consumers of heating oils, lubricants and other products would be required to go direct to the refinery to take deliveries. He denied charges of proponents of the bill that the large companies take commercial consumer customers from the retailers, pointing out that such customers, by reason of their volume of purchases, credit and other factors, are entitled to wholesale prices.

"It would be a shock to American industrial customers to find a law depriving them of the right to deal direct with manufacturers," he said.

"Even the departments of the government, the United States Army and Navy service and the Merchant Marine would be deprived of their 'buying freedom' unless they went to the refinery itself and there took title to what they wanted."

Pointing out that some of the jobbers supporting the bill are themselves operators of service stations competing with independent retailers, the oil company executive declared that, to be consistent, the bill should prohibit jobbers from having any interest in retail outlets.

That there is no "monopoly" in the industry, he testified, is proven by the fact that no one company produces as much as 6½ percent of the total crude output, no single refiner accounts for as much as 12½ percent of the refined production, and the number of petroleum jobbers, over 9900 in 1938, increased some 528 percent in the past 20 years.

Proponents of the bill, he charged, would like to force producers to provide as much oil as they wished at the prices they offered and compel the public to buy the products at such prices as they might see fit to charge.

Commenting that "if the proponents of this bill have their way, the American petroleum manufacturer will be the real isolationist of the world," Brown asserted that "from the standpoint of the consumer and retailer, this proposal to divorce marketing from other petroleum operations is a harmful and uneconomic infringement of the freedom of buying. From the standpoint of the oil industry, it is as senseless as forbidding an automobile manufacturer to deliver to a dealer on consignment or to maintain local sales offices, or forbidding a farmer to deliver any eggs or chickens to a consumer and requiring him instead to deliver everything at the farm to a middleman."

As spearhead of the attack on the legislation, Brown answered in detail many of the charges leveled against the integrated companies by proponent witnesses at earlier hearings. He denied that the large companies do not compete with each other, explaining that while Socony-Vacuum Oil Company sells about as large an amount of gasoline under its house brand as any other in the country "nevertheless, our share of the gasoline business of the country is not more than about 9 percent—and the competition is so keen that we do not see any bright prospects of increasing this percentage. In fact, in New York and New England, we had approximately 36 percent of the gasoline business in 1929 and only about 24 percent in 1938."

The "fabulous profits" of the major companies, he told the subcommittee, are large only in their totals. The profits of companies often run into millions of dollars, but even so, represent only a small return on invested capital.

"We estimate that during the 5-year period ended December 31, 1938, we made net profits on all business and services in the United States equal to something less than one half cent per gallon on our total volume of crude oil and all petroleum products sold by us in this country," he said. "This profit represents 3.4 percent on our depreciated investment and working capital employed in the business during this period.

"It is interesting to compare this profit of less than one half cent per gallon with taxes of all kinds (including gasoline sales taxes) which in this same period amounted to 2.45 cents per gallon even when spread over sales of crude and all products."

He explained that "exchanges" of gasoline between companies are really sales and that the companies insist the gasoline delivered them shall be within the limits of their specifications. There is nothing reprehensible in the sale of such gasoline under a company's brand name, pointing out that there is nothing in the trademark or copyright laws requiring the owner of a trademark to manufacture the goods he sells under the brand name and calling attention to the fact that many jobbers sell gasoline under their own brand names.

Answering questions by members of the subcommittee, Brown expressed the firm belief that passage of the bill would "inevitably" increase retail prices, and denied flatly that there is any arrangement between the major companies for price-fixing. The real objective of the proponents of the measure is to

Federal oil taxes continued in new law

Refusing by a vote of 83 to 57 to limit the life of the various taxes on oil and its products to one year, the House of Representatives on June 19 passed the tax revision bill, continuing the oil and other nuisance taxes until June 30, 1941.

The bill was approved by a vote of 357 to 1 after Representative Harter (Dem., Ohio) vainly urged that the excise tax burden be eliminated next year.

Anxious to dispose of the bill quickly, to permit the Senate to act on it before June 30, the House devoted most of its time to consideration of the provisions eliminating the last remaining vestiges of the undistributed profits tax and substituting therefor flat taxes on corporate income, sections permitting the carryover of losses and provisions permitting corporations to increase their capital stock valuation so as to escape heavy excess profits taxes.

The only discussion of the taxes as they apply to oil was offered by Representative Carlson (Rep., Kans.), who told the House that oil tax collections exceed the payrolls of the large companies. For every permanent employe of Continental Oil Company, he said, $4330 was collected in taxes during 1938; phrased another way, he said, they amounted to $4.70 for each share of stock outstanding. Taxes paid by Phillips Petroleum Company, he added, last year exceeded by more than $7,000,000 the combined amounts paid in wages to employes and dividends to stockholders.

House votes Connally Act extension of three years

Extension of the Connally hot oil act for a period of three years was approved by the House of Representatives June 20 after two hours of debate in which the bill was alternately attacked as monopolistic and price-fixing and defended as an essential step in the conservation of petroleum.

Because the Senate had provided that the act should be permanent legislation, when it passed the bill in March, the measure was sent to conference, but it is expected the Senate will accept the House amendment as it did two years ago.

Debate on the measure was made the occasion for a demand for a higher tariff on imported oil by Representative Everett M. Dirksen (Rep., Ill.), who told the House the bill is designed to "bring a measure of stability to the petroleum industry and to prevent its complete disruption under the impact of cheap bootleg oil.

"But while we are giving attention to the domestic oil industry and seeking to restrict the shipment in commerce of contraband oil for the purpose of bringing a measure of stability and prosperity to the industry," he added, "this Congress should also be giving attention to another matter which is equally important to the industry. I refer to the mounting imports of oil from foreign countries.

"For the calendar year 1938, total imports of petroleum were 54,063,924 barrels, or an average of 148,120 barrels daily. This is the equivalent of the entire Texas production for more than one month. Great Britain imposes a tax of 3 cents per gallon, or $1.26 per barrel, on imported oil and thus protects her coal industry. We, on the other hand, protect neither our diminishing coal industry nor our petroleum industry, and permit imports of petroleum either free or at a duty which is so small as to be negligible or of no effect in providing protection."

"do away with efficient competition," he declared.

Opposition of the Ohio Petroleum Marketers Association to the bill was submitted by Eric V. Weber, president of Eureka Oil Company, Cincinnati, who charged the measure will not accomplish the principal objectives of its proponents, will only further demoralize the economic system under which the industry operates, will be of no particular benefit to the consuming public and will lower employment and wages.

"Those of us who have studied this proposed legislation from the viewpoint of the industry as a whole and the consuming public, feel strongly and sincerely that this bill, if enacted, will prove to be antagonistic to the welfare of all affected parties," he said.

J. Howard Pew Testifies

Although the legislation only divorces marketing from the other branches of the industry, it would require the refineries to divest themselves of all pipe lines, tank cars, tank ships and barges, trucks and storage plants, it was contended by J. Howard Pew, president of Sun Oil Company.

Characterizing the arguments of proponents as "contradictory, illogical and inconsistent," Pew said "I find it hard to treat these arguments with respect.

"I do not recall an instance in which so much legislative dynamite, industrial disaster and economic perversity have been packed into so few words of a legislative proposal," he commented. "Nor do I recall a case in which the proponents of a measure have so sedulously sought to conceal its real meaning and purpose."

Pointing out that the industry deals in enormous tonnage of cheap materials which must be moved long distances, Pew declared that a chief reason why petroleum products are cheap is because the industry has built up its own transportation system. These facilities are all specifically designed for the particular service they render, and represent an investment of nearly $2,000,000,000.

Revolutionary for West

Effect of the legislation, if enacted, will be particularly pronounced on the Pacific Coast where it "will change our present methods of operation almost 100 percent by forcing middlemen into a picture where they never have been," it was declared by R. L. Minckler, assistant to the president of General Petroleum Corporation of California, representing the California Oil and Gas Association.

Charging that the purpose of the legislation is to make an unearned place for the middleman in the oil business, whether he is necessary or unnecessary, he declared "it is doubtful that the proponents of this bill have the slightest conception of what the oil business really is."

"I object to this legislation because it will result in gross inefficiency and waste," he added.

Profits from Marketing

Challenging the charge that the integrated companies lose money on their marketing operations, W. T. Holliday, president of Standard Oil Company of Ohio, declared flatly that "our company has always made a profit on its marketing operations; it has only been the profits from its marketing operations which have enabled it to survive during the last 10 years."

"The statement has been reiterated by proponents of this bill that refinery marketers cannot operate their marketing department at a profit. I challenge that statement.

"We are opposed to this bill because it would destroy the unintegrated or so-called independent refineries. It is a notorious fact that the refining branch of the petroleum industry during most of the last 10 years has not made a profit but that, on the other hand, for the last 10 years as a whole has operated at a loss.

"The bill seeks to strike down the whole refining branch of the industry simply in order to punish refiners that happen to be engaged in production or crude oil pipe line operations."

Answering the charge that savings in delivery cost through the companies' own facilities have not been passed on to the public, Holliday declared that "that reduction had been passed on to the public even before the economies were achieved."

"If this proposed bill had been in force during the past 11 years our company could have done nothing toward the achievement of reduction in transportation cost," he said. "It is also to be remembered that through the use of barges, tankers and gasoline pipe lines, refineries have been able to widen the area of distribution, reaching markets which they could not have reached on a competitive basis by rail transportation. That force of competition would be destroyed by this bill. This bill would leave solely in the hands of a horde of middlemen one of the manufacturers' chief means of survival and competition."

Pointing out that his company is primarily a marketing organization, the witness declared that "if it had to comply with the provisions of this bill it would not be a case of a refinery getting rid of a marketing department but of a marketing company trying to decide what to do with its refineries, which it built and maintains primarily because it has desired to assure itself of a supply of products and a control of their quality, and because it has considered the union of manufacturing and marketing fundamentally sound.

"If its refineries were turned over to a separate company and the stock thereof distributed to the stockholders of the original company. I do not see how that company could hope to survive under the restrictions imposed by this bill."

No Benefit to Retailers

No benefits would be derived by service station operators from enactment of the Harrington bill, it was asserted by Wilmer Schuh of Milwaukee, speaking for the National Association of Petroleum Retailers. On the contrary, he told the subcommittee, the legislation would bring about a number of dislocations and hardships. If the bill is passed, he said, it should be amended to divorce wholesaling from retailing, thus really placing each branch of the industry on its own feet as the proponents of the measure demand.

Pointing out that the Independent Petroleum Association of America, without a dissenting voice, voted in Dallas, June 6, not to recommend divorce, Russell B. Brown, general counsel of the organization, pointed out that under its present structure the oil industry has made the best motor fuel and lubricants available in the most remote sections of the country and expressed the fear that the divorce legislation would threaten both to reduce this flow and add to the price.

"Every unnecessary middleman who

Illinois bill seeks study of oil needs

The maze of legislative proposals for regulation of the booming Illinois oil industry was further simplified last week as additional measures were killed or stricken from the calendar. Legislative leaders are pushing for adjournment this week.

A new senate bill, introduced by Senator John J. Parrish, calls for a ten-member special legislative committee, evenly divided between house and senate members, to conduct a thorough investigation of the state's oil industry and draft legislation for future consideration. A hurried investigation of the industry was conducted by a legislative committee early this year, and several bills embodying the committee's recommendations are now before the legislature. The committee found there was no need at this time of proration legislation, but the subject would be one for the proposed interim committee to study.

The house passed and sent to the senate a bill to require filing with the state department of mines and minerals a statement and map of each well to be drilled, with evidence of filing to be authority for drilling. It would set methods for filling abandoned wells and of drilling wells, and require notice to the department of intention to plug and abandon a well.

The senate, meanwhile, passed and sent to the assembly a bill to provide that when lands are owned by more than one person, leases for oil and gas can be made by the majority owner or owners, and another measure to provide that the department of mines and minerals must approve drilling of oil and gas wells in any working or abandoned coal mine, with logs to be filed with the department and the state geological survey.

The senate simplified its calendar by striking one oil bill, while four house oil bills were tabled and one struck from the calendar. The senate eliminated a bill seeking to require pipe line operators to post bonds with the state auditor, while the house struck a bill that would have permitted state officials to lease state property for oil drilling.

House bills killed would have required all service stations and garages to post signs showing the percentage of Illinois crude used in the manufactured products sold; would have placed a tax of $1 on each acre of oil land in the state; would have required the state department of finance to establish three grades of gasoline and required containers to be labeled to show grade, state and price per gallon; and would have established police at points of entry to assess the state motor oil tax against all incoming cars carrying more than 20 gallons of gasoline.

inserts himself between the refinery and the retailer adds to the cost burden," he said. "If the consumer pays the new cost created by such middlemen, then the use of petroleum products decreases. If the additional cost of such middlemen is passed back to the producer, then it may become unprofitable for some to continue operations on the same scale as at present."

Students of economics involved in the marketing of other products have not found that a separate marketing has always been successful, he pointed out, citing the farmer as an illustration. "We believe we have a right to hesitate when asked to discard a system which has lowered costs and increased availability and to substitute a system the efficacy of which is uncertain," he said.

"A very definite responsibility is laid upon the petroleum industry to avoid wasteful production of petroleum and to conserve for the best use of the American people this irreplaceable natural resource," he continued. Outlining the conservation programs which have been put into effect, he asserted that many of these reforms were forced upon the industry by the independents.

"The present excise taxes upon imports of petroleum and its products were proposed by the independents in the industry, and were opposed by those integrated companies which alone were then and now are bringing this cheap foreign oil into our domestic market," he said. "The independents also proposed and urged the adoption of the Connally hot oil law and the various other measures intended to promote the conservation of our petroleum resources and prevent their wasteful dissipation.

"Many such measures intended to promote the welfare of the domestic petroleum industry and of the independents in that industry have been strongly opposed by two groups: large integrated companies, commonly called the majors, who apparently would benefit by enlargement of their powers, and other groups who profit by periods of distress.

"This element has admitted that its period of greatest prosperity was during a period of wasteful overproduction which threatened to rapidly dissipate one of the nation's most valuable natural resources, a time when the real petroleum industry, those producing petroleum and those refining it, were so demoralized by the uneconomic situation created by wasteful overproduction that bankruptcies were common and financial, industrial and employment conditions in the oil states were so disturbed that the present administration called a conference of the governors of those states and of representatives of the industry to meet the serious situation which had arisen."

The present system of distribution of oil products is not ideal, Brown admitted, adding that his organization has repeatedly objected to the grave and serious faults in it. But, he said, "we do not now see that the divorcement of marketing from other branches of the industry would be a cure for these bad practices. The time may come when such a policy might be advocated as a last resort; we cannot, however, believe that it is proper to take such desperate measures until other policies have had their opportunity."

Brown pointed out that advocates of the divorce plan do not propose any practical system to substitute for the present one.

"We have no quarrel with those marketers who are seeking a remedy for unsound practices in the industry," he told the subcommittee. "They have every right to seek that remedy. We insist, however, that any remedy which may be adopted should have a sound basis. If such a measure is to be sound, then it should be because of what it would accomplish and not merely because of the character of existing conditions. In other words, the proposed cure should be such as would meet the ills complained of and remedy them and not one which might create still greater distress without any alleviation of present disorders."

Farish Testifies Two Hours

In a two-hour presentation covering every phase of the industry, William S. Farish, president of Standard Oil Company of New Jersey, declared June 23 that there is no need for the "dislocation of business channels and methods, instability of employment and loss of confidence on the part of investors" which he said would follow adoption of the measure.

Outlining the methods of operation followed, he contended that competition between the major companies is keen, that there are differences between the various brands of gasoline and that the practices criticised by the proponents have definitely economic underlying bases.

Like other officials who had preceded him, Farish denied that the integrated companies deliberately lose money on their marketing operations in the effort to squeeze the independent out of the picture.

"They tell you that the major oil companies are losing money on their operations, that they are deliberately losing money for sinister purposes and that this purpose is to drive everybody else out of the oil business," he said. "Then, the argument runs, the major oil companies will have a complete monopoly and at the same time they will recoup all their losses and accumulate huge profits by gouging the consumer.

"The argument which attributed such an impossible program to the oil companies is simply too naive to be taken seriously."

Not only would such actions lay the companies open to the operations of the anti-trust laws and the more powerful economic weapon of public opinion, he pointed out, but would be impossible from an economic standpoint.

Farish sought to give the subcommittee a comprehensive idea of the manner in which gasoline prices find their level, pointing out that gasoline is sold under different conditions from other commodities and that the motorist, being mobile, can pass station after station until he finds one with prices that suit him, so that no station has a "monopoly of location" permitting higher prices than a less advantageously located competitor and prices have a natural tendency to level out at the lowest figure quoted in a locality.

"The oil industry is admittedly not perfect," he said. "We have all made mistakes, and there is plenty of room for improvement. But I confidently submit the question to your judgment whether an impartial appraisal of the record of the oil busienss from a social standpoint suggests need for overturning established business practices and destroying existing business organizations."

Few independent jobbers go broke and, in fact, they are as a whole the most prosperous group of small business men in the country, the subcommittee was told by Paul G. Blazer, president of Ashland Oil & Refining Company, the bulk of whose sales are through such outlets.

Enactment of the bill, he charged, would be more serious to the refiners

[*Continued on page 65*]

Market Situation

Half cent gasoline price increase of week ago is rescinded . . . Large runs to stills reduce crude stocks materially but prevent gasoline reductions

Markets unsettled after gasoline prices relapse

The markets remain generally unsettled, after having proved unable to hold the ground that was temporarily gained at the middle of June in the virtually nation-wide marking up of gasoline tank wagon prices.

The one-half cent a gallon increase was largely rescinded by the middle of the past week, as numerous marketers in the Middle West, in the Middle Atlantic states, and in the Southwest had marked prices back down.

The markets for gasoline at the refineries have remained steady at the lately improved levels, however, and in some cases sellers are quoting prices ⅛ cent a gallon higher than 10 days or so ago.

The crude markets continue fairly steady, although the failure of the gasoline tank wagon prices to hold was disappointing to producers, as a better gasoline market would have bolstered the crude price structure. Although the price of Kent County crude, Michigan, was raised last week from 78 to 88 cents a barrel, the change was only of local significance.

In California the outlook for the crude market has been made more promising by the enactment of state proration, to replace the present only partially effective voluntary curtailment.

The general market situation is being aided currently by the comparatively strict nation-wide control of crude oil production, in the face of local overproduction in Illinois. United States production is holding within

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market demand, and fairly effective curtailment appears to be in prospect for July.

Less satisfactory conditions prevail, however, in the refining division of the industry, as crude runs to stills have continued exceptionally large, with plant owners dipping into crude storage for raw material, in addition to absorbing the current output of the wells of the country.

The large refinery runs have resulted in the turning out of relatively large current production of gasoline, and that output has not permitted normal withdrawals of gasoline from storage, which is larger than economically desirable.

Statistics show further large refinery output

Continued production of crude oil within market demand was indicated in the latest weekly statistics of the industry; but crude runs to stills and gasoline production remained large, despite some reduction; and gasoline inventories were reduced only slightly, although substantial withdrawals are normal at this time of the year. Stocks of both light and heavy fuels are being seasonally increased. The refinery runs have been maintained at the high levels only through substantial withdrawals of crude oil from storage, in consequence of the moderate current production of crude.

Production and Runs

United States crude oil production averaged 3,447,050 barrels daily in the week ended June 17, having increased 70,100 barrels over the previous week's restricted rate. The output in the new week was 9.9 percent larger than that in the corresponding week last year, as exceptionally strict curtailment prevailed in June of 1938.

Crude runs to stills came down 30,000 barrels from the record level of 3,510,000 barrels daily reached in the week ended June 10, but were 13 percent larger than in the June 18 week of last year, when refinery runs were curtailed strictly along with crude production.

Gasoline Situation

Production of gasoline totaled 11,459,000 barrels in the week ended June 17, having averaged therefore 1,637,000 barrels daily, or 20,000 barrels less than in the previous week.

Gasoline stocks came down only 59,000 barrels, to 82,657,000 barrels, in the week of June 17. At that level they were 2.2 percent lower than on June 18 last year, when they totaled 84,476,000 barrels.

Fuel Oil Stocks Larger

Stocks of gas oil and distillate fuels, the heating oils, were increased from 29,357,000 to 30,047,000 barrels in the week ended June 17. The inventories of residual fuel oils, used for industrial purposes, rose from 111,239,000 to 112,224,000 barrels. Comparable figures with a year ago are not available. However, the light oil stocks at refineries on June 17 this year totaled 24,135,000 barrels, as compared with 23,696,000 barrels on June 18 last year. The heavy oils in storage at refineries totaled 107,700,000 barrels on June 17 of this year, compared with 112,245,000 barrels on June 18 of last year. Thus the stocks of heating oils currently are about 500,000 barrels larger than a year ago, while the industrial oil stocks are about 4,500,000 barrels smaller.

Crude Stocks Lower

Crude oil stocks were lowered by the unusually large amount of 3,255,000 barrels, to the 274,692,000-barrel level, in the week ended June 10, according to the Bureau of Mines. The crude storage then was 7.6 percent smaller than one year previously. The large reduction of the week was accounted for largely by Texas, where stocks came down over 2,500,000 barrels, from 91,834,000 to 89,238,000 barrels; although another important withdrawal was that of about 700,000 barrels of California light oil. The Texas decrease embodied a reduction of about 1,300,000 barrels in East Texas, 800,000 barrels on the Texas Gulf Coast, 200,000 barrels in West Texas, and 350,000 in the rest of the state. Changes in crude stocks in other states and districts were mostly comparatively small.

Gasoline tank wagon prices back down

Price changes during the past week included reductions by a considerable number of marketers of gasoline tank wagon prices that had been marked up in the previous week in the general advance over the nation, as the higher prices failed to hold in various states and districts.

In the crude oil division of the market, there was a local change of a posting, when Imperial Refining Company advanced the price of Kent County grade crude in Michigan from 78 to 88 cents a barrel. Other fields of the state were not affected, and the increase was regarded as being of only local significance.

The Texas Company early last week reduced its tank wagon gasoline prices ½ cent a gallon in New Jersey, Pennsylvania, Maryland, Delaware, and the District of Columbia, where it had advanced them that amount a few days before. The company had followed Sinclair Refining Company in posting the advance, as had most other marketers in the area. Continental Oil Company, like The Texas Company, advanced but later cut back. Companies that did not meet the increase included Standard Oil Company of New Jersey, Atlantic Refining Company, and Sun Oil Company.

In Texas, Continental Oil Company on June 20 rescinded its ½ cent advance in tank wagon gasoline prices, which had been made June 15, and some other companies similarly rescinded lately-made advances.

In the so-called Standard of Indiana marketing territory, comprising the states of the Middle West, most of the marketers, effective June 20 or June 21 rescinded the ½ cent a gallon increases that they had posted around June 14. The companies that cut back included Skelly Oil Company, Lubrite Division of Socony-Vacuum Oil Company, Continental Oil Company, Phillips Petroleum Company, Pure Oil Company, Mid-Continent Petroleum Corporation, Deep Rock Oil Corporation and others. Standard Oil Company of Indiana had not advanced prices except where subnormal.

Tank car prices on sales of gasoline last week were generally unchanged, although some Oklahoma-Kansas refiners were quoting their supplies ⅛ cent a gallon higher.

Wholesale prices of natural gasoline,

Trends of United States Production and Stocks

Figures are from American Petroleum Institute weekly reports, except those on crude stocks, which are from Bureau of Mines weekly reports

	Crude Oil Production (Barrels Daily)	Crude Runs to Stills (Barrels Daily)	Crude Oil Stocks (Barrels)	Gasoline Stocks (Barrels)	FUEL OIL STOCKS	
					Gas Oil & Dist. Fuels	Residual Fuel Oil
1937						
August 28	**3,731,450	3,425,000	309,506,000	66,997,000	112,111,000	
September 25	3,666,300	◎3,455,000	307,974,000	65,620,000	116,472,000	
1938						
March 19	3,433,550	3,080,000	306,380,000	**93,192,000	122,067,000	
May 28	3,098,650	3,150,000	301,583,000	87,946,000	23,619,000	110,696,000
June 25	3,083,900	3,025,000	293,463,000	82,412,000	25,343,000	112,458,000
July 30	3,316,400	3,240,000	288,514,000	76,864,000	27,573,000	116,721,000
August 27	3,388,500	3,255,000	285,029,000	71,754,000	29,747,000	117,179,000
September 24	3,251,150	3,220,000	280,278,000	68,605,000	31,183,000	119,285,000
October 29	3,237,500	3,145,000	275,824,000	67,590,000	33,690,000	120,029,000
November 12	3,243,250	3,180,000	273,394,000	¶67,551,000	34,175,000	120,491,000
November 26	3,260,900	3,295,000	270,563,000	68,628,000	33,749,000	119,885,000
December 10	3,245,100	3,150,000	§269,509,000	68,587,000	32,068,000	118,711,000
December 31	3,201,450	3,115,000	273,024,000	71,695,000	29,082,000	115,741,000
1939						
January 28	3,248,250	3,235,000	271,763,000	77,279,000	26,583,000	112,766,000
February 25	3,328,850	3,185,000	271,758,000	84,597,000	23,419,000	110,252,000
March 25	3,382,350	3,225,000	273,915,000	87,561,000	21,487,000	107,551,000
April 22	3,526,700	3,280,000	277,156,000	*87,769,000	21,058,000	105,035,000
April 29	3,568,200	3,405,000	278,440,000	86,794,000	†25,844,000	†108,409,000
May 6	3,580,900	3,275,000	*278,607,000	86,216,000	26,167,000	108,597,000
May 20	3,438,400	3,460,000	277,068,000	84,294,000	26,389,000	109,405,000
May 27	*3,585,250	3,405,000	278,289,000	84,152,000	26,992,000	109,386,000
June 3	3,558,800	3,415,000	277,947,000	83,637,000	27,440,000	110,219,000
June 10	3,376,950	**3,510,000	274,692,000	82,716,000	29,357,000	111,239,000
June 17, 1939	3,447,050	3,480,000	.....	82,657,000	30,047,000	112,224,000
June 18, 1938	3,137,300	3,080,000	‡297,197,000	84,476,000	†24,898,000	†112,109,000
Change from year ago	+9.9%	+13.0%	—7.6%	—2.2%	†+20.8%	†+0.1%

** All time peak. * Peak for 1939. § Lowest for 17 years. ‡ Stocks, June 11, 1938.
◎ Peak prior to 1939. ¶ Lowest for year.
† Prior to week ended April 29, 1939, figures did not include stocks at terminals, in transit, etc., except in California. Such stocks, outside California, included for first time in week of April 29, 1939, consisted of 4,772,000 barrels of gas oil and distillates and 2,769,000 barrels of residual fuel oil.

kerosene, and both light and heavy fuel oils were generally unchanged.

U. S. motor gasoline at Oklahoma refineries ranged last week about as follows: 62 octane and below, 4¼ to 4⅝ cents a gallon; 63 to 66 octane, 4½ to 4⅞ cents; 67 to 69 octane, 4¾ to 5⅛ cents; 70 to 72 octane, 5 to 5⅜ cents.

Corresponding prices in the Chicago market were: 4 to 4½ cents, 4⅜ to 4½ cents, 4½ to 5 cents, and 4⅝ to 5¼ cents.

In East Texas, 60-62, 400 end point gasoline was priced generally at 4¼ cents a gallon.

Natural Gasoline

Natural gasoline, grade 26-70, was selling in the Mid-Continent markets, f.o.b. refineries, at 2¾ cents a gallon, and sales were reported at the same price f.o.b. Breckenridge, Texas.

Kerosene prices f.o.b. Oklahoma refineries ranged from 3¾ to 4¼ cents a gallon for the 41-43 water white grade, and from 3⅞ to 4⅝ cents for the 42-44 water white grade; and corresponding prices in the Chicago market were 3½ to 4⅛ cents and 3⅝ to 4⅜ cents.

Prices of fuel oils were generally unchanged last week. In the Chicago market range oil was priced from 3¼ to 3⅞ cents a gallon. The No. 1 white oil was priced from 3¼ to 3¾ cents, and No. 1 straw from 3¼ to 3½ cents. No. 2 straw was 3⅛ to 3½ cents. No. 3 oil was 2⅞ to 3⅛ cents. No. 5 oils were 57½ to 65 cents a barrel. The No. 6 oil was quoted at 35 to 45 cents.

Crude Production

U. S. output gains another 25,000 barrels as it averages 3,469,400 barrels per day in past week

UNITED STATES production of crude oil averaged 3,469,400 barrels daily during the week ended June 24. All Mid-Continent areas contributed to a 25,700-barrel gain over the preceding week. This was only 21,600 barrels under Bureau of Mines estimate of demand.

Texas production rose to 1,326,750 barrels daily, up 11,750 barrels from the week before and 13,528 barrels over quota. The rise, due to new completions, cut the gap between output and bureau estimate to 100,550 barrels.

California fell 8000 barrels from the preceding week in averaging 608,800 barrels daily. At this rate excess over Central Producer's Committee was 18,800 barrels, and excess over federal allocation was 14,200 barrels.

Oklahoma lifted 458,750 barrels daily to gain 16,775 barrels over the week prior and overrun state allocation by 30,750 barrels and bureau figures by 8450 barrels.

Louisiana yield at 270,475 barrels daily was 2100 barrels more than that of the previous week, 7452 barrels above state allowable, and 5475 barrels above bureau figures.

Illinois spurted to 221,460 barrels daily; 4910 barrels above the week before. Excess over bureau recommendation increased to 47,160 barrels.

Kansas was up 6055 barrels to 168,025 barrels, 2025 barrels above state and 15,625 barrels above bureau figures.

Revised regulations for Kansas drafted

A draft of revised rules and regulations for administration of Kansas oil proration laws, to conform to changes in the laws made by the last legislature, was submitted last week to the oil advisory committee of the Kansas Corporation Commission for study and revision. They were prepared by a special committee under the chairmanship of Tom Johnson, Wichita operator.

Principal changes involve new potential methods, including factors of bottom-hole pressure and fluid level measurements for establishing potentials. Also drafted were new rules for taking into account the acreage factor as a basis for computation of potentials.

United States Crude Oil Production

Estimates Compiled by THE OIL WEEKLY

DISTRICT OR STATE	Bureau of Mines Estimate of Daily Demand (June)	State Allowable in June	BARRELS DAILY FOR WEEK ENDED June 24	June 17
TEXAS—				
Texas Panhandle			71,050	73,250
North Texas			85,550	85,600
West Central Texas			31,950	31,050
West Texas			215,250	208,400
East Central Texas			92,050	92,200
East Texas Field			386,900	388,500
South Texas			227,200	226,400
Texas Gulf Coast			216,800	209,600
Total Texas	1,427,300	1,313,222*	1,326,750	1,315,000
CALIFORNIA—				
Long Beach			44,700	45,700
Santa Fe Springs			28,700	28,100
Huntington Beach			26,500	26,900
Dominguez			17,000	19,900
Ventura Avenue			38,600	38,000
Midway-Sunset			54,500	59,400
Kettleman Hills			53,300	58,000
Wilmington			81,300	80,600
Others			264,200	260,200
Total California	594,600	590,000†	608,800	616,800
OKLAHOMA—				
Oklahoma City			108,125	101,525
Seminole Area			110,235	105,250
Fitts			26,225	25,500
Others			214,165	209,700
Total Oklahoma	450,300	428,000	458,750	441,975
LOUISIANA—				
North Louisiana			73,575	73,825
South Louisiana			196,900	194,550
Total Louisiana	265,000	263,023	270,475	268,375
ILLINOIS—				
Salem			121,350	116,000
Loudon			44,925	44,000
Other New Pools			48,485	48,000
Old Pools			6,800	8,550
Total Illinois	174,300		221,560	216,550
KANSAS—				
Burrton-Haven			10,100	9,770
Russell County			22,525	20,100
Silica			11,950	8,525
Others			123,450	123,575
Total Kansas	152,400	166,000	168,025	161,970
NEW MEXICO	117,000	117,000	114,250	111,000
EASTERN STATES—				
Pennsylvania Grade			71,400	72,650
Others, Eastern			6,000	6,050
Total Eastern States			77,400	78,700
MOUNTAIN STATES—				
Wyoming	73,300		63,500	62,650
Montana	17,300		15,000	15,350
Colorado	5,000		3,800	3,850
Total Mountain States	95,600		82,300	81,850
MICHIGAN	53,400		66,850	66,800
ARKANSAS	54,700		56,500	57,550
KENTUCKY	17,000		14,160	14,200
INDIANA	2,700		3,680	3,000
Total United States	3,491,000		3,469,400	3,433,700

* Daily average, considering Saturday and Sunday shutdowns, water exemptions, and exemption at Rodessa.
† Recommendation of Central Committee of California Oil Producer's Association.

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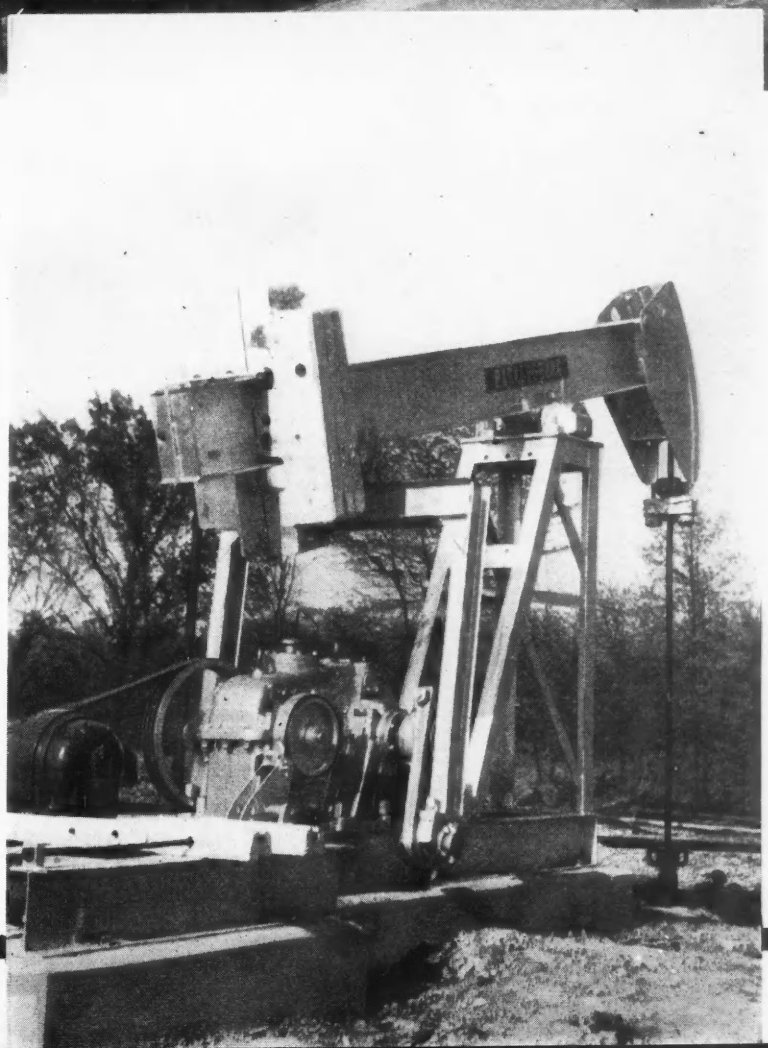

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WEEK'S DRILLING HIGHLIGHTS

Arizona

Indications are that Arizona is to become an oil producing state. A test 35 miles from Phoenix is estimated capable of producing 260 barrels of fairly high gravity oil at 1720 feet.

California

Coles Levee area in Kern County has a completion making 750 barrels of oil from 10,010 feet. At Fruitvale, in an area where oil is had between 3000 and 4000 feet, location has been made for a test of the Vedder zone, expected below 8000 feet.

Michigan

A showing which is expected to result in a well has been uncovered in a mile southeast extension of the Walker pool in Kent County, and a wildcat in the same county is a small pumper. Three other wildcat completions in the state were dry.

Southwest Texas

Drilling deeper on the West Ranch in Jackson County uncovers a second producing sand which may prove of importance. A number of wildcats in Jim Wells County are testing. Three more Sparta-Wilcox wildcat projects are starting in Lower Coast area. A gasser in Duval County, opening a new spot, has hopes of making an oil well.

Florida

Preliminary plans for a 10,000- or 12,000-foot test in the Florida Everglades 44 miles west of Miami and near the common corner of Dade, Monroe and Collier counties, are complete. The well will search a geophysical high located 6 years ago. Contract has not yet been let.

Comparison of Permits Granted for New Wells

STATE	Week Ending June 24	Total this Mo.	Total this Year	Total this Date Last Year	1938 Year Total
Arkansas	4	25	110	112	247
California	17	79	493	605	1,146
Louisiana	26	144	622	634	1,214
Kansas	25	119	697	780	1,453
Michigan	34	136	631	372	953
Oklahoma	49	156	1,012	1,015	1,978
Texas	210	789	5,189	6,858	12,369
Total	365	1,448	8,580	10,376	19,360

Kansas

Oil production for Phillips County, its first, was assured last week with potential rating of 827 barrels for the Bow Creek field, which is producing from the Lansing-Kansas City lime. Extensions were indicated for the Barnholdt pool into Rice County and for the Pawnee Rock pool, Pawnee County. North of Silica pool, Rice County, a test showed oil from Arbuckle.

Texas Coast

A new oil field for the South China area of Jefferson County, and a new gas field near Collegeport, Matagorda County, were highlights of the week.

Louisiana Coast

Both east and northwest outpost tests at Eola appeared promising last week, while Wilcox production was being defined to the southwest at Villa Platte. Indications were that Paradis prospect, St. Charles Parish, would produce gas and distillate. New producing horizons were either proven or appeared likely for Grand Bay, Roanoke, Bancroft, Golden Meadows, White Castle, Lake Pelto and Abbeville fields.

West Texas

Ector County's Deep Permian producer made between 350 and 450 barrels on test following acid treatment. The saturation, about 20 feet thick, was uncovered unexpectedly earlier this month while carrying open hole. The Schleicher County discovery well registered 259 barrels initial on test following an acid treatment.

North Texas

Two lime areas contributed producers during the week, both instances where other tests subsequent to discovery had been dry. Wildcats to explore the Pennsylvanian were started in Hardeman and Cottle counties. Young County's recent discovery made 1500 barrels on production test following acid.

Illinois

Niagaran production opened in Marion County, north of Sandoval, was confirmed by a well making 39 barrels in 15 minutes from 2919 feet. Lake-Centralia-Salem pool is a year old and has nearly 1000 wells completed.

Arkansas

Western limits of Magnolia field extended 1¼ miles through completion of a well making 27½ barrels per hour.

Summary of Wells Completed in the United States Week Ending June 24, 1939

	Completions	Oil Wells	Gas Wells	Failures	Initial Production	Completions to Date 1939	Completions to Date 1938
Alabama	....	....	....	....	.....	1	2
Arkansas	7	5	....	2	1,464	110	120
California	21	18	1	2	15,509	507	597
Colorado	....	....	....	....	.....	11	5
Florida	....	....	....	....	.....	....	....
Illinois	80*	61*	1	18	16,252	1,757*	455
Indiana	7	1	....	6	20	81	54
Kansas	27†	18†	1	8	24,777	621†	887
Kentucky	10	6	2	2	468	293	337
Louisiana	26	16	1	9	2,637	483	528
Michigan	25	14	2	9	5,020	653	399
Mississippi	2	....	....	2	.....	4	10
Montana	....	....	....	....	.....	52	27
Nebraska	....	....	....	....	.....	....	1
New Mexico	10	9	1	....	1,481	299	260
New York	13*	11*	1	1	32	231*	385*
Ohio	25*	10*	13	2	116	403*	450*
Oklahoma	48	24	6	18	14,347	998	1,081
Pennsylvania	44*	34*	8	2	79	631*	1,175*
Texas	150	110	4	36	79,113	4,725	6,510
Utah	....	....	....	....	.....	....	....
West Virginia	9	3	6	....	14	227	353
Wyoming	....	....	....	....	.....	61	49
Total this week	504	340	47	117	161,329	12,147§	13,688‡§
Tota' last week	549	394	34	121	257,931	11,643§	12,476‡§
Total this year	12,147§	8,286	857	3,003	10,514,476	....	....

* Includes water-input wells. † Includes s. w. disposal wells. § Includes 1 Georgia completion.
‡ Includes 2 Tennessee completions.

Oklahoma Fields

Two Carter County wildcats fail to live up to hopes.

Test showings for two possible small pools in Seminole.

Tulsa.—Two Oklahoma wildcats have failed to produce from formations which previously gave showings. In Carter County, Pure Oil Company is plugging back to test formations above the Hunton lime in Noble 1, C NE SE 35-3s-1e. Last week this lime was considered the source of the oil in a fluid column of 1700 feet and casing was set at 4632 feet. The lime failed to yield oil on bailing after plug was drilled. Previously this well had drilled to Arbuckle lime, which tested dry and perforations failed to get oil from the Tulip Creek formation. The Mayee and Sycamore formations are to be tested above the Hunton lime.

The Grant County wildcat of Carter Oil Company, Staggers 1, C W ½ SE NW, is drilling in shale below First Wilcox sand at 5435 feet. The Upper Wilcox ran high and cores showed slight saturation of oil and gas. Electrical logging showed water throughout this sand.

After drilling out the plug and bailing down a bridge halted testing of the Carter County wildcat of Pure Oil Company, where Hunton lime is being tested. This well, Noble 1, C NE SE 35-3s-1e, was dry in Wilcox sand and was plugged back after testing both this formation and the Tulip Creek sand. Casing was set at 4632 feet. Hunton lime was found between 4638 and 4737 feet and a column of 1700 feet of fluid, 900 feet of it oil, was found after casing had been raised.

First Wilcox sand showed only water in the Grant County wildcat of Carter Oil Company, C W½ SE NW 4-25n-3w, on electrical logging test. This well, Staggers 1, had slight shows of both oil and gas in cores taken at various intervals in the First Wilcox, which was found high in relation to the Lamont field, 2 miles south. Base of the First Wilcox was at 5383 feet and the end of the week found hole being made in shale between the First and Second Wilcox sands.

Showings for 2 possible small pools in Seminole County were at testing stages last week. South of Konawah, Culver and Shepherd's Burton 1, SW NW SE 3-5n-5e, set 7-inch casing at 2544 feet to test Hunton lime, found saturation between 2662 and 2668 feet. It made several heads before tools were lost while cleaning out. South of Mission and west of Bowlegs, J. C. Shaffer was preparing to install pump to test Owens 1, SEc NE 18-8n-6e, which had a showing from a sand, 4180 feet.

The west side of the Shawnee pool, Pottawatomie County, continued to offer promise for enlargement of this pool. Olson Oil Company had two blowouts while completing Gillis 2, SW NW NW 5-10n-4e. It is at 4412 feet in Earlsboro sand. Three other wells are drilling in this part of the old field, recently revived by extensions.

Southwest of the Sac and Fox pool, Lincoln County, a showing in a broken sand between 3123 and 3136 feet, will be tested with cable tools. Black Gold Refining Company, Lacquemont 1, NEc 28-14n-6e, set pipe at 3093 feet. A half mile east of the old Skellyville pool, Lincoln County, Conley Drilling Company has a showing in Prue sand between 3027 and 3106 feet. A core between 3030 and 3040 feet showed saturation.

Three Lincoln County wildcats were abandoned last week. Fain Drilling Company found both Wilcox sands dry and abandoned Wertman 1, SWc 12-15n-4e, at 4710 feet. Villines et al's Marshall 1, NW NE NE 28-15n-4e, northeast of the Chandler pool, drilled to 5080 feet in Second Wilcox sand. Northeast of the Chandler pool, Cooper Drilling Company abandoned Johnson 1, NEc NW 32-15n-5e, after testing Prue sand between 3535 feet and 3569 feet.

In the southeast corner of Pottawatomie County, Kerlyn Oil Company and Indian Territory Illuminating Oil Company shut down its wildcat test, Lambert 1, C E½ NW NE 6-5n-2e, after electrical logging showed water in the first Wilcox sand between 5685 and 5697 feet. A wildcat south of the Maud pool, Pottawatomie County, Cooper Drilling Company's Strawn 1, SEc SW 32-8n-5e, was given up after going to 4411 feet in Simpson dolomite.

A second well for the Beeker area, Hughes County, is ready to test the Viola lime. Phillips Petroleum Company's Shemwell 1, C SE NW 8-5n-10e, set casing at 5568 feet, total depth 5578 feet, and will drill in with cable tools. The well is a half mile northwest of Beeker 1, a Viola lime producer in the NE NW SW 8-5n-10e, which has been pumping small amounts of oil along with water over a long testing period. A mile southeast of the producer, Delaney et al has a location for Foster 1, NW NE NE 17-5n-10e.

After finding water in the Wilcox sand at 7646 feet, Nels Burton plugged back and set pipe to test upper beds in his Cleveland County wildcat, Boggs 1, NEc SE 16-9n-2w. Pipe was set at 7375 feet and the hole plugged back to 7500 feet. This well is a mile southeast of Burton's Hirsch 1, NW NW NE 17-9n-2w, which has been pumping both oil and water on intermittent tests over several months. It is producing from perforations between 7480 and 7490 feet.

The shallow area near Hobart, Kiowa County, drew another location last week, Holcomb 1, SEc NW 25-7n-19w, which is 7 miles southwest of the Viola lime producer of Gled Oil Company, Watkins 1, SW NW 18-7n-17w. A mile southwest of the producer, Becket et al set surface pipe at 1000 feet in Standerfer 1, NEc 25-7n-18w. Production in the Watkins well is from Viola lime at 1055 feet. Shell Oil Company, Inc., has set surface pipe in a west offset, Tarliff 1, SEc NE 19-7n-17w.

Oklahoma Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Atoka—		
Giblet, Rich 1, sec sw 2-1n-12e....	*	728
Beckham—		
Northern, Van Vector 2, 100 ft n nw se ne 25-8n-22w	¶3	1107
Caddo—		
Ohio, Bruce 6, se sw ne 11-5n-9w..	60	3980
Nichols, Royce 3, se nw sw ne 12-5n-9w	¶15	3357
Carter—		
Magnolia, Nichols 1, ne ne se sw 9-4s-3w (otd 1098 ft)	7	1165
Comanche—		
Creel et al, Karthaus 1, nw nwc sw 35-2n-10w	*	1018
Creek—		
Abraham, McIntosh 2, sw nw ne 7-16n-10e .....¶1.8		2351
Natural Petroleum, McIntosh 2, c ne nw 26-18n-7e	¶½	2093
Sand Springs, Clements 2, 120 ft n c s½ sec 19-19n-8e	*	2836
Hughes—		
Evans, Oliphant 1, se sw se 7-9n-9e	*	3546
Kay—		
Halko-Meyers, Davis 1A, se ne sw 27-25n-1w	*	3142
Kiowa—		
Wichita Oils, Ebatt 1, nw nw ne sw 14-5n-15w	*	151
Hagerling et al, Bozman 1, sec ne 14-5n-18w .....Abnd.		Lcn.
Lincoln—		
Mudge, Robertson 7, nwc sw 10-14n-6e	105	3132
Wilcox, Sac & Fox 28, sec sw 15-14n-6e	50	3084
Fain, Wertman 1, swc 12-15n-4e..	*	4701
Villines et al, Marshall 1, nw ne ne 28-15n-4e	*	5080
Cooper, Johnson 1, nec nw 32-15n-5e	*	3569
Logan—		
Helmerich et al, Henderson 1, sec nw 27-16n-1e .....¶13.8		5405
Okfuskee—		
Stekoll, Holmes 2A, ne se ne 16-11n-11e	*	2690
Okmulgee—		
KBK Production Co., Beaver 1, nw nw ne se 19-13n-12e	*	2005
Cusack, Doyle 5, c e½ se sw 15-13n-14e	*	1941
Hollifield, Ashley 2A, ne ne sw nw 32-14n-14e	20	1748
Selby et al, Sutton 11, nw nw sw se 33-14n-14e	*	1222
Osage—		
Slatter 1, nw nw ne ne 7-21n-12e..	*	1395
Powers et al, 3, cwl nw ne ne 35-24n-8e	64	2191
Zola, 6, nw se nw sw 21-24n-9e (pb 2277 ft)	12	2388
Pawnee—		
Johnson, Finley 5, nw se ne ne 28-20n-9e	104	2097
Franchot, Lowery 10, cwl e½ ne 17-21n-8e	*	2290
Adamson, Sharp 4A, sw sw ne sw 34-21n-8e	*	1312
Payne—		
Mid-Continent et al, Gray 3, nw sw sw 18-18n-2e 9458		4880
Pontotoc—		
Continental, House 5, sw ne se 12-1n-7e 1669		4660
Osborn, King 1, nec se 32-5n-8e (pb 2210 ft)	25	2564
Pottawatomie—		
Berkey, Bruno 3, sw nw nw 6-6n-5e 1320		4182
Pioneer, Billington 1, nw ne sw 36-7n-4e (otd 4220 ft)	45	4285
Taber et al, Miller 5, ne sw se 29-7n-5e	300	4155
Mid-Continent, Vieux 3, ne sw se 31-7n-5e	140	4126
Vieux 4, se nw se 31-7n-5e.....	240	4150
Yorkan, O'Connor 1, nec 6-10n-4e..	165	4459
Delaney et al, Brammer 1, se sw sw 25-11n-4e	*	5003
Yorkan, Sauter 1, sec 31-11n-4e....	90	4459
Seminole—		
Sunray, Shuermeyer 1, se ne sw 12-6n-5e	70	3797
Wood et al, Tobin 2, nw sw nw 22-7n-5e	250	2805
Flynn et al, Work 1, ne se se 19-8n-7e	*	4286
Ligon et al, Tommy 1, nw sw ne 25-8n-7e (pb 3184 ft)	65	3411
Rogers et al, Robinson 1, swc se 36-8n-7e	10	3435
Stephens—		
Carter et al, Arn 16, ne sec ne 26-1s-5w	7	465
Tomlinson, Montgomery 2, sw nwc se 11-2s-8w	71	2060
Tulsa—		
Doake et al, Bruin 2, se sw nw 18-17n-11e	¶3	2217

* Failures; † Junked; ¶ Million cu. ft. gas.

Kansas Field Developments

First production in Phillips County in at Bow Creek. Extensions are indicated for Barnholdt and Pawnee Rock.

Wichita. — Drilling development in Kansas last week served chiefly to verify indications of earlier in the month. One of these was the new pool for Phillips County, its first. Potential of 827 barrels was established in official test of the Lansing-Kansas City lime between 3080 and 3164 feet by Blue Steam Oil Company's Donaldson 1, SE NE NE 25-5n-18w. The field has been named Bow Creek.

North of the Silica pool, Rice County, Central Petroleum Company has Arbuckle lime production in Dipple 1, CNLE½ SE 27-19-10w. On preliminary test the well swabbed 142 barrels in 4 hours from 2292 to 3313 feet, without acid. The well is three fourths of a mile north of production and separated from the field by dry holes.

Sherman County was put into the gas production column, although the one well is doing but 25,000 cubic feet, which is being used locally at Goodland. Goodland Independent Gas Company found the gas showing earlier in the month in a lime of Cretaceous age at 100 feet.

Field extensions of promise last week would push the Barnholdt pool a half mile to the north and into Rice County and give the Pawnee Rock pool, Pawnee County, a half mile extension westward. The Pawnee Rock well swabbed 60 barrels in 6 hours from Arbuckle lime after acid treatment. The well north of Barnholdt may be drilled deeper in testing Mississippi lime.

The state drew only 25 locations last week.

Bow Creek was the name given the first oily field for Phillips County, Kansas. Blue Stem Oil Company established potential of 827 barrels in Donaldson 1, SE NE NE 25-5n-18w. The Lansing-Kansas City lime is the source of the oil between 2080 and 3164 feet. The well had been showing for 10 days, as first oil rose in the hole when 3100 feet were reached. Casing was then set at 3080 feet and bailing started. After 5-inch liner had been run and perforated at 3120 feet, 1500 feet of oil rose in the hole. The new pool is 4 miles north of the small Faubian field in Rooks County.

An extension of a half mile to the west was assured for the Pawnee Rock field, Pawnee County, although potential has not been taken. Texon Oil Company's Nelson 1, NEc SE 14-20-18w, used 1000 gallons of acid to get preliminary flow of 25 barrels an hour from Arbuckle lime, total depth 3806 feet.

Extension of the Barnholdt pool, McPherson County, northwest into Rice County, continued to look favorable. Nelson Drilling Company had 1500 feet of oil in the hole in Hodge 1, NWc NE 25-20-6w, from Mississippi chat between 3303 and 3323 feet. It is a mile and a half northwest of production. The chat was drilled with cable tools and more drilling may be done before testing begins.

East of the Beaver pool, Barton County, R. E. Day is running 5-inch casing to test a chat showing in Feltes 1, SEc NE 14-16-12w. It is at 3340 feet.

An effort to extend the old Graver pool, McPherson County, will be made by W. C. McBride, Inc., whose Heinzleman 1, SEc 30-21-1w, is a fourth of a mile west of production.

A second well for the Mississippi lime Nunn pool, Finney County, was assured last week. Atlantic Refining Company drilled to 4679 feet in the lime in Gableman 1, C NE SE 27-21-34w, where the well flowed 175 barrels in 18 hours after using 3000 gallons of acid. It is a south offset to the discovery well.

The Kansas part of the Forrest City basin area, northeastern part of the state, drew another wildcat and had one abandoned last week. The Three Star Oil Company has set surface pipe in Griffith 1, C NW SE 14-18-18e, Douglass County. In Shawnee County W. M. McNabb abandoned Fitz 1, SW SE NW 4-12-14e, at 2700 feet.

Kansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Barton—		
Shell, Ehrlich "B" 5, cwl nw ne sw 1-16s-14w	*	Lcn.
Lauch, Zohorskey 1, cwl nw ne sw 26-20s-11w	*	3382
Butler—		
Smith et al, Albers 1, se nw se 21-25s-4e	*	2759
Richmond, Rose 3, nw ne se nw 17-27s-6e	8	2761
Cowley—		
McKnab et al, Waite 1, nec nw 28-31s-4e	6521	3350
Ellis—		
Dickey, Henderson 2, nwc ne 7-11s-17w	3850	3440
Bay, Burnett 1, sec ne 12-11s-18w	Abnd.	Lcn.
Ellsworth—		
Mid-Continent, Ehley 1, sec 30-17s-10w	708	3267
Greenwood—		
Sinclair Prairie, Browning 57, c w½ w½ 20-22s-10e	25	2265
Aikman et al, Myers "B" 2, ne se sw 10-24s-12e (pb 1754 ft)	*	1763
Johnson—		
Sagamore, Kanabe 2, se ne nw 29-14s-22e	¶0.5	728
McPherson—		
Westgate-Greenland, Henne 1, nw se sw 18-17s-1w	848	2675
H. & M. Drilling Co., Miller 1, c se se 24-19s-2w	*	2995
Ottawa—		
Babcock, Copeman 1, c s½ se 7-10s-2w	*	4135
Rice—		
Continental, Hamilton "B" 1, swc ne 19-18s-7w (salt water disposal)		4180
Phillips, Hemmer 1, nwc se 16-18s-10w	*	3283
McPherson Drilling Co., Cramm 2, csl se ne nw 15-19s-9w	3549	3198
Skelly, Sledd 2, swc 27-19s-9w	1459	3207
Gulf, Kirkendoll 1, c e½ sec 5-20s-9w	583	3272
Garden et al, Haushield 1, csl sw ne se 15-21s-7w	748	3391
Russell—		
Skelly, Colliver 3, nwc se 28-14s-13w	1444	2897
Carter, Sellens 1, cwl sw ne sw 17-15s-13w	811	3226
Cities Service, Tittle "C" 3, swc nw 13-15s-14w	48	3356
Tittle "D" 2, ne nw ne 14-15s-14w	1672	3337
Gulf, Mollie 9, se sw se 25-15s-14w	2488	3299
Sedgwick—		
Continental et al, Reed 3, se sw se 1-26s-1w	*	2617
National Refining Co., Fiek 1, sw nw nw 9-27s-2e	*	3395
Sumner—		
Shell, Rothwell 4, c ne sw 14-32s-2e	15	2821

*Failures; †Junked; ¶Mil. cu. ft. gas.

Divorce

[*Continued from page 56*]

than to any other branch of the industry, requiring them to divest themselves of all transportation facilities, and would set up transportation as a separate independent branch, getting much of the profit.

"I would much rather be the head of the company that takes over those facilities than to remain the president of this company, even though it might continue to own its other present properties representing an investment many times as great as that in our barges and terminals," he commented.

Rather than eliminate monopoly, Blazer contended, the bill would establish dominant organizations—but on a horizontal rather than vertical plane. That is, he explained, there might arise monopolies in refining or marketing.

He characterized the measure as an unnecessarily drastic method of dealing with companies which might operate their marketing departments at a loss. "Since we have never subsidized our marketing operations by diverting earnings from other departments of the company, probably at a sacrifice, profitable properties in which we have invested almost a million dollars," he said. "There must be hundreds of other small and medium-sized companies that would suffer under this law the same as we would.

"No group in the oil industry would be helped; everyone would be hurt, including thousands of jobbers who participate in the savings afforded by their suppliers' low-cost transportation facilities. Those companies at which this bill is especially aimed would be better able to protect themselves than many others, while small, integrated companies would be ruined."

Operators of the 4,250,000 trucks of the country will be hard hit by disintegration of the industry, it was declared by John V. Lawrence, general manager of the American Trucking Associations. The trucks, he said, consume slightly less than 40 percent of all petroleum products consumed by motor vehicles and the bill would result in increased cost of operation to the industry.

Views of the Mid-Continent Oil & Gas Association were presented by J. S. Hunter, president, who submitted copies of resolutions adopted by his organization opposing both marketing divorcement and pipe line divorcement.

"Without presenting in detail an extended argument and list of reasons in opposition to the proposed legislation," he said, "I call to your attention and emphasize that the passage of this legislation is opposed, practically unanimously, by both large and small operators engaged in the oil industry in the Mid-Continent area where a large percentage of the crude oil of the United States is produced."

Illinois Developments

39 barrels in 15 minutes proves new Marion County pool.

Richland County well flows large volume of sulphur gas.

Illinois Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Clay County—		
Pure, Ausbrook 1	267	3105
Mitchell 3	*	3080
Stewart Oil Co., J. Fields 1	*	2565
Clinton County—		
Santa Fe O&G Co., Robbin 8	30	987
Effingham County—		
Kingwood Oil Co., McWhorter 1	15	7000
Fayette County—		
Carter, Clow (C-65) 3	487	1503
Oscar McClain 6	900	1566
La Verne Deal 5	340	1537
Irvin Hobbs 6	315	1524
Irvin Hobbs 7	918	1575
N. M. Hopper 6	514	1573
S. Williams 1	5	1591
S. Williams 2	304	1586
Leona Williams 3	216	1590
Mike McDonald 1	191	1574
Elsie Owens 3	103	1591
Ella Huffman 1	300	1596
F. P. Sinclair 1	500	1596
Robert Fortner 2	48	1604
Robert Fortner 3	63	1604
N. B. Heckert 3	123	1524
M. B. Heckert 4	429	1553
C. Owen 2	66	1552
Stewart Oil Co., Durbin 3	200	1557
W. C. McBride, Inc., Logue 6	100	1485
L. Logue 7	250	1534
Garnier et al, Wade 1	*	2418
Johnson Dr. Co., Logue 1	*	1581
Ira Rhynes, Koberlein 2	200	1564
Schuman Bros., Combe 1	300	1570
Union Products, Arnold 5	204	1568
Lange et al, Bloom 1	*	1794
Franklin County—		
Adams O&G Co., Old Ben 1	*	4688
Jefferson County—		
R. E. Vawder, Kell 1	140	2077
Carter, Boggs 3	134	1952
Norman Copple 2	152	1945
Minerva Oil Co., Sargent 1	*	2200
Lawrence County—		
Rosenthal et al, William Norton 1	¶7.50	1208
Ford Wagner, Ackman 3	*	320
Marion County—		
Texas Co., City of Centralia 25	147	1889
City of Centralia 29	245	1828
E. Hayes 3	287	1892
R. Lankford 2	175	1838
L. Hawthorne 20	420	1810
B. Hawkins 13	105	2004
B. Hawkins 14	1092	1974
B. Hawkins Community 3	259	1874
L. Hawthorne 19	140	1856
E. Jett 10	406	2086
E. Jett 13	210	1860
E. Jett 16	707	2065
E. Jett 17	210	2111
J. O. Richardson 9	875	1957
J. O. Richardson 10	805	1962
C. E. Richardson 2-B	210	1833
W. C. McBride, Fyke 6	*	1930
Kingwood Oil Co., Devore 5	313	1870
Hardman et al, Hess 1	*	2356
Dallas & Shendel, Toulme 1	*	2123
Menhall et al, Hazelwood 1	*	1806
Texas Co., Sands 1-G	I	1844
Monroe County—		
Ames Oil Co., Gummershimer 2	20	431
Richland County—		
Pure, Southgate 2	51	2635
Wakefield 10-A	65	2638
Wakefield 11-A	62	2631
Storer 1	534	3000
Mabee Drilling Co., Sparr 4	99	2592
Leathers et al, Yonka 1	*	3062
Shelby County—		
Kingwood and Continental, Trueblood 1	*	3513
Washington County—		
Gulf, Baldwin 1	*	1866
Magnolia, Francis 2	125	1261
Francis 3	25	1304
Francis 4	99	1262
Manitou Petroleum Co., Kurwicki 1	210	1289
Hamilton et al, Roadway 1	36	1302
Phillips, Hunleth 1	*	2567
Beavers et al, Saucey 1	*	1380
J. J. Broadus, Chapman 1	*	1310
Wayne County —		
Rock Hill Oil Co., Twist 2-C	6	3362
Twist 5-B	500	3358

"I" indicates input well.

* Failures; † Junked; ¶ Million cu. ft. gas.

Mattoon, Illinois.—Menhall et al's Benoist 1, E½ NE NW 8-2n-1e, Sandoval Township, confirmed the Niagaran lime pool opened six months ago by Southwestern Oil & Gas Company's Benoist 21 a mile north of Sandoval, Marion County. It topped the formation at 2919½ feet, and flowed 39 barrels of 42-gravity oil in 15 minutes before being shut in for lack of storage. Present bottom of 2923 feet may be lowered 2 or 3 feet.

The confirmation well is 360 feet west of the discovery, which topped the Niagaran at 2920 feet and was bottomed at 2926 feet. Two other wells drilled in the area since the Southwestern company's strike—Max Pray's John Langenfeld 1, north of the discovery, and Marshall's Illinois Central, ⅛ mile west—resulted in failures. The new production is in the old Sandoval pool where wells have been producing from the shallow Benoist sand for the past 30 years.

Most spectacular event of the week was the 27-hour uncontrolled production of Ohio Oil Company's Chapman 1, SW NW 13-4n-9e, ½-mile north of production in the Noble-Denver Township pool of Richland County, which blew a gas and salt water spray. The flow was estimated between 12 and 15 million cubic feet a day, although no gauge was taken. Containing a large amount of sulphur, the gas cannot be utilized as a fuel but would prove valuable in repressuring operations in the pool to the south where there is little natural pressure.

The week marked the first anniversary of the Lake Centralia-Salem pool of Marion County, which, when opened by The Texas Company's Tate 1, Section 5-1n-12e, was hailed as an 8-mile extension to the New Centralia pool. Development during the year, however, revealed it to be a separate pool of much larger area and more prolific production. Almost 1000 producing wells had been drilled in the pool up to its first birthday, and production is coming from three formations—the Benoist, Aux Vases and McClosky. This area accounts for almost 125,000 barrels of the state's total daily production.

In Randolph County, Ben Banner's Evers 1, SE NE NE 5-6s-5w, Steeleville Township, encountered its fourth oil show last week at 729 feet. Forty minutes were required for each bailer to fill with oil. The wildcat will be taken to the McClosky, and at last report was drilling at 750 feet. Previous oil shows were encountered at 100 feet, 152 feet and 560 feet.

Irvin J. Vawter's Sarah Kell 1, NW SW NE 9-1n-1e, Grand Prairie Township, which opened a new Jefferson County pool a week ago, was cleaning out after a 10-quart shot in a sand formation topped at 2065 feet. The strike previously swabbed 70 barrels of oil in 12 hours.

West Virginia Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Gilmer County—		
Carnegie Nat. Gas Co., Rexroad 1	5	1980
Kanawha County—		
United Carbon Co., Campbell 1	¶9.83	4997
Poca Fork O&G Co., Fee 1	¶2.71	5245
M. C. Allen, Fletcher 1	¶.35	3920
Marion County—		
Victor O&G Co., Talkington 1	¶.06	2885
Ritchie County—		
M. & Y. Oil Co., McGinnis 4	4	1975
Roane County —		
United Fuel Gas Co., Goans 4834	¶.12	2140
Wayne County—		
Huffman et al, Dyer 2	5	2009
Chartiers Oil Co., Buskirk 1	¶.40	3763

* Failures; † Junked; ¶ Million cu. ft. gas.

Kentucky Fields

Hopkins County test has Aux Vases saturation

Owensboro, Ky.—Snowden & McSweeney's Allan Reid 1, 3 miles east of Owensboro, was abandoned at 1535 feet after the McClosky was found dry. The wildcat is a little over 3 miles west of the recently-opened McClosky pool by J. C. Preston's C. H. Abel 1, now a good pumping producer.

Also an apparent failure, Snowden & McSweeney's C. H. Abell 2, was dry at the McClosky level but was continuing on down below 1500 feet. This operator's No. 1 on this lease confirmed the pool.

About 6 miles northeast of the Abell pool, J. C. Preston was drilling below 200 feet on Jess Kelly 1, near Yelvington, which will also test the McClosky. Cable tools are being used.

In the Utica section, Ohio Oil Company's S. Coomes 1 encountered slight showings of oil in the Barlow and Bethel sand and was continuing down for a test of the McClosky. After finding a dry hole in Lula Akins 1, Walter Cameron, W. E. Hupp et al's Lula Akins 2 was drilling at 270 feet.

M. B. Hughes' Bura Brown 1, near Dalton in Hopkins County, had a good Aux Vases sand saturation between 1645 and 1707 feet, with a quantity of free oil in the hole, but it was deepening for a test of the McClosky. If the lower lime formation does not show for a good well, it will be plugged back for a test of the sand saturation. In this county, O. C. Vickers and Jess Bollinger spudded Cicero Smith 1, ¾ mile north of Roseville. It was drilling at 200 feet with cable tools at last report. W. F. Lacy's Bailey Whitsell, 4 miles north of Madisonville, was drilling for McClosky at 2970 feet without an oil show, while Phillips Petroleum Company's B. H. Parker 1, 3 miles northeast of Hanson, was fishing for lost tools below 4000 feet.

Kentucky Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Butler County—		
Penn-Tuck Oil Co., Anderson 1	*	239
Daviess County—		
J. C. Ellis & Pet. Co., Hansford 6	200	1773
Snowden & McSweeney, Abell 1	150	1451
A. Reid 1	*	1535
Hupp et al, Delacy 2	40	1360
Floyd County—		
Harris O&G Co., Honsker 1	¶.06	2605
Henderson County—		
Hupp et al, Boswell 4	35	1710
Palmer Dr. Co., Letcher 1	28	2174
Knott County—		
Kentucky-W. Va. Gas Co., Osborne 579	¶.12	3075
Ohio County—		
O'Hara, Petty 1	*	740
Powell County—		
J. P. Perry, Tamblind 1	15	....

* Failures; † Junked; ¶ Million cu. ft. gas.

Indiana Fields

Posey County wildcat flows 14 barrels hour

Evansville, Ind.—Superior Oil Company's New Harmony Realty Corp. 1, NW NW SW 10-5s-14w, Harmony Township, on Ribeyre Island in Posey County, flowed 14 barrels natural in 1 hour from the Waltersburg sand. It had been plugged back to the sand, between 2181 and 2220 feet, after salt water was found in the lower McClosky lime. Now shut in for lack of storage, the wildcat is reported by operators to be free of salt water.

Indiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Daviess County —		
Hanson & Patterson, Graves 3....	*	660
Gibson County—		
Choate et al, W. Coleman 1.....	*	3905
Johnson County—		
Wissing, Smith & McCoun, White 1	*	1889
Martin County—		
C. O. Robertson, Denny 1	*	805
Spencer County—		
Troy Ref. Co., Anderson 3.....	20	770
Vandenburg County—		
R. E. Moore, Baker 1.....	*	1820
Vigo County —		
Carl Robinson, Spencer 1.....	*	1802

Ohio Completions

Ashland County—		
C. E. Cramer, Acker 3.....	3	646
Athens County—		
W. F. Milhoon, Bryson 1.....	¶.15	1079
Coshocton County—		
Hulse-Kuntz, Mossholder 4.....	32	3202
Murphy et al, Ashcraft 1	15	3166
Cuyahoga County—		
Brendal Prod. Co., Frye 1.....	¶.50	2901
Guernsey County—		
W. R. Cory, Brown 1.....	*	1432
Jefferson County—		
Ellis, J. Allefer 7.....	10	1305
Knox County—		
Johnson et al, Snyder 1.....¶6.00		2836
Licking County—		
St. Albans Dr. Co., Wright 3.....	15	769
C. A. Davis, Frethey 2.....	¶.58	2547
E. Davis 1	¶.02	2402
Medina County—		
Dymo Oil Corp., Ripley O-4.....	I	582
Ripley O-11	I	588
Ripley O-20	I	580
Meigs County—		
Ohio Fuel Gas Co., Russell 3.....	¶.43	879
Proffitt et al, Taggart 1.....	¶.03	....
Monroe County—		
Hogue & Protzman, M. Frank 1..	30	1387
Larrick & Heisler, Zwick 1.....	¶.05	1737
Lumbatis et al, Mallett 1.....	*	1370
Muskingum County—		
Gas Producing Co., Steinhoff 1..¶1.35		3998
Noble County—		
Yoker Valley O&G Co., Ankrom 1.¶1.10		1608
Muhlbach et al, Heddleson 1	¶.10	1572
Washington County—		
Koon Run Oil Co., Fee 1.....	10	1298
Baker & Dailey, Pryor 1.....	1	1347
Ohio Fuel Gas Co., Walsh 6.....	¶.20	1856
Wayne County—		
Alex McCrea, Slutz 1.....	¶.34	2970

"I" indicates input wells.

New York Completions

Allegany County—		
Bradley Prod. Corp., Star farm, Bolivar	4	1460
Star farm, Bolivar.....	5	1458
J. H. Reynolds No. 5, Sage farm, Bolivar	5	1270
Ebenezer Oil Co., Vincent farm, Scio	6	1065
Emerson farm, Scio.....	7	1056
Custer Oil Co., Whitcomb farm, Scio	5	1190
Allegany: Water Intake Wells		
Ebenezer Oil Co., Emerson farm, Scio	..	1062
Duke & Reynolds, Nelson farm, Wirt	..	1270
Budd Oil Co., Anderson farm, Alma	..	1368
Otsquago Oil Corp., Pike farm, Alma	..	1425
Bradley Prod. Corp., Breckenridge farm, Alma	..	1375
Steuben County—		
G. L. Cabot, Inc., N. Husted 1....¶1.82		4020
L. Highland 1.....	*	4755

* Failures; † Junked; ¶ Million cu. ft. gas.

Following recovery of good saturation in the Lower Pennsylvanian sand below 951 feet, Al Walker and Bruce Martin's Oscar Schmidt was waiting on cement after setting casing. Location is C SE SW 13-3s-9w, 1¼ miles east of Mackey, Barton Township, Gibson County. This wildcat is just 30 feet from a dry hole drilled by these operators to the McClosky. The new well was undertaken on the basis of a Lower Pennsylvanian showing recovered by the first well. First offset announced is Ray Ryan and Milton Lobree's C. Weiberle 1, a southeast offset in Section 24-3s-9w. Acreage in the vicinity is scattered between independents and several major companies, resulting in considerable additional drilling if the Schmidt pays off as anticipated. The wildcat recovered 23 feet of saturation, and is bottomed at 974 feet.

New wildcat locations of the week included L. L. Lemoine and J. Ervin Taylor's Delbert Haynes 1, SE SE NE 11-6s-7w, Grass Township, ¾ mile northwest of Midway, Spencer County, and Sunshine Oil & Gas Company's L. D. Trent 1, NE SW 11-5s-6w, Jackson Township, a mile southwest of Gentryville, Spencer County.

Pennsylvania Completions

Bradford District

Company, Well and Location	Init Prod. Bbls.	Depth
George Van Vecthen & Sons, Farr.	2	....
N. V. V. Franchot, Mgr. Trustee, Rounds	40	....
Penn Valley Crude Oil Corp., Redfield	5	....
Pure Penn Oil, Inc., Kinley.....	5	....
Forest Oil Corp., 4 wells.....	4	....
Forest Petroleum Corp., 4 wells....	4	....
Niagara Oil Corp., 7 wells.....	7	....
Bradford Transit Co., 9 wells.....	9	....
Bradford: Water Intake Wells		
R. E. Hungiville No. 2, 299-300 Bing	..	....
Forest Oil Corp., 2 wells.....	..	....
Forest Petroleum Corp.....	..	....
Niagara Oil Corp., 3 wells.....	..	....
Butler-Armstrong District		
Leithold & Co., William Leithold..	*	....
Middle District		
Gilbraith & Co., Thompson.....	2	....
Case Pomeroy & Co., Lot 89.....	1	....
New York-Pennsylvania: Gas Field		
Sylvania Corp., Harrison No. 2....	¶	....
Armstrong County—		
Peoples Natural Gas Co., Shettler 1.	¶.68	3640
Greene County—		
Equitable Gas Co., Huffman 3....	¶3	3110
Indiana County—		
Equitable Gas Co., A. E. Gray 1...	¶.21	3620
T. W. Phillips Gas & Oil Co., Elmer Steel 1	*	3436
Potter County—		
Empire Producing Co., N. Kemp 1..	¶36	4818
New York State Natural Gas Co., Ladd Estate 1.....	¶2	5205
New Penn Dev. Co., Dunshie 1...	¶.85	5126
Washington County—		
R. Orrill et al, Belle Kelsey 1..	¶.59	1393

* Failures; † Junked; ¶ Million cu. ft. gas.

Five additional tests in Missouri campaign

St. Joseph, Mo.—Five additional tests for the Missouri part of the Forrest City Basin have been added to the drilling record for the state. In addition three tests have been started in the shallow gas area southeast of Kansas City, Jackson County.

One of the basin tests is in Buchanan County, east of St. Joseph, where Miller and associates have location in Carrough 1, C SE SE 24-27n-35w. The location is near the Missouri River. Platte County drew two of the new wells: Joe G. Kelly's Fee 1, NE SW NE 26-51n-34w, an old well which had been drilled to 294 feet and now drilling at 680 feet. It is northeast of the Bonner Springs gas field, which is across the Missouri River in Wyandotte County, Kansas. The other Platte County well is being drilled by the Missouri Valley Gas & Oil Company, Young 1, C SW SE 30-51n-34w, which is below 150 feet.

The eastern part of the basin area drew two of the tests. In Livingston County, Bradley Brothers have a location in Manning 1, SEc NW 22-58n-23w. A Chariton County test, the southeastern part of the basin, has been started by Frank Buttram and A. A. Ash, Vance 1, SWc NE 35-53n-18w.

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HOUSTON, TEXAS

West Texas Fields

Ector County deep Permian well rates 350-450 barrels.

Schleicher County discovery increases flow after acid.

Midland, Texas.—Favorable response to acid treatments made by the first deep Permian test drilled on a producing structure in Ector County gives the new strike a potential rating between 350 and 450 barrels daily. Gulf Oil Corporation's Holt 1, SE SE SW PSL Section 1, Block A, near northwest edge of the North Cowden field, qualified as a commercial producer from saturation in the lower member of the Middle Permian section topped at 5148 feet, or about 1000 feet below the regular oil level, after using 1000 gallons of acid followed by an injection of 5000 gallons at a maximum pressure of 500 pounds on the tubing and 600 pounds on the casing.

The deeper oil zone, which has a thickness of about 20 feet, was encountered unexpectedly earlier in the month while carrying open hole below the 7-inch casing seat at 4080 feet. Formation water logged at 5187-5200 feet, with an elevation of 3091 feet, was excluded in plugging back to 5168 feet. Combination string of 1-inch and 2½-inch tubing landed at 5167 feet with packer at 5067 feet, remained secure after acidizing. The well swabbed 215 barrels of 38-gravity oil in 9 hours after the second treatment, and may be reacidized to try for a steady oil flow. The showing made by this deep discovery will encourage more deep drilling in Ector and adjacent counties when the regular Permian zones approach depletion.

J. T. Barnes et al's Thomas 1, western Ector County wildcat, fulfilled depth contract and shutdown at 4752 feet, with water showing at intervals below 4542 feet. Small amount of free oil was logged at 4334-52 feet. This test will encourage more drilling, as information on the area indicates it may be on the southeast flank of a favorable prospect.

West Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Andrews County (Fuhrman)—		
Fuhrman Pet. Corp., Boner 8-B	1144	4472
Andrews County (Deep Rock)—		
Tripplehorn et al, Thornberry 1	15	4480
Cochran County (Dean) —		
Shaw et al, Dean-Texas Co. 1	420	5005
Crane County (Church-Fields)—		
Magnolia, University-Hardwick 19	132	3140
Crane County (Sand Hills)—		
American Liberty Oil Co. et al, Tubb-Humble 9	291	4425
Crockett County (Crockett)—		
Gilcrease Oil Co., University-Humble 5-16	60	1463
University-Humble 6-16	54	1506
Ector County (Foster)—		
Arkansas Fuel Oil Co., Johnson 3-B	593	4224
Stanolind, Witcher 14	1821	4180
Ector County (Goldsmith)—		
Gulf, Goldsmith 184	693	4213
Phillips-Pure, Cowden 62	2242	4130
Ector County (North Cowden)—		
Broderick & Calvert, Holt 6	1675	4372
Llano Oil Co., Holt 2	728	4218
Tide Water-Atlantic, Holt 6-C	2030	4427
Ector County (Harper)—		
Texas Co., Parker 9-B	458	4200
Gaines County (Wasson)—		
Carter et al, Moore 1-A-46	1110	4999
Hockley County (Slaughter)—		
Texas Co., Slaughter Block 5, Labor 60	251	5100
Howard County—		
Merrick & Lamb, Bell 6	198	2842
Jones County—		
Fields & King, Humphrey 3-B	3000	3255
C. T. Taylor 7	3000	3258
Hedrick Oil Co., Ltd., Akard 3	54	2149
Lewis Prod. Co., Muenzler 4	5280	3276
Pecos County (Payton)—		
British-American, Payton 20	116	2105
Payton 22	125	2091
Cities Service, Dorr 2	357	2092
Pecos State Oil Co., Pecos River 9	305	2089
Pecos County (Pecos Valley)—		
Big Bend P. L. Co., Iowa Realty 3	79	1678
Kone Prod. Co., Pecos Valley 11	382	1628
Mid-Continent Pet. Corp., Jasper Co. Realty Co. 6	246	1660
Myers & McLean, Iowa Realty 1	*	1500
Taylor County—		
T. M. Knowles, Tr., E. Bowles 2	*	1973
LeClair O&G Co.-Roy Guffy, M. Bowles 1	*	2230
Tal-Vez Oil Co., H. Galle 1	¶18½	2361
Upton County (McCamey)—		
T. P. Coal & Oil Co., Lane 35-A	426	2130
Ward County—		
Gulf, Hutchings 125	364	2780
G. W. O'Brien 111	236	2770
Winkler County (Henderson)—		
W. K. Roy. Co., Walton-Humble 5-C	1408	3055
Yoakum County (Bennett)—		
Devonian Oil Co., Hodges 2	1074	5225
Yoakum County (Wasson)—		
Aloco Oil Co., Johnson-Texas Co.2	388	5230
Willard-Texas Co. 8-A	716	5150
Murchison et al, Fairman 4	572	5100
Shell, Baumgart 4-C	1373	5168

* Failures; † Junked; ¶ Million cu. ft. gas.

Schleicher Well Increses

Schleicher County's first oil producer materially increased its yield after using acid. Lone Star Gasoline Company's Page-Humble 1, near C NW NE GH&SA Section 30, Block L, flowed 259 barrels of 40.8-gravity oil initial through ¾-inch choke after using 1500 gallons of acid in Lower Pennsylvanian at 5727-46 feet. It is located ⅞-mile southeast of a prolific gas-distillate producer in the 5500-foot Strawn, which proved dry in the deep strike.

Official potential gauge of the oil well has been delayed pending the emptying of lease tanks through truck deliveries to a refinery at Mertzon. Humble Oil & Refining Company assigned the Page lease to Lone Star Gasoline Company for gas development, and because of retaining the oil rights the former will refund the cost of the test and assume ownership. Lone Star Gasoline Company's Page-Shell 1, C SW NW Section 31, also missed the gas-distillate zone, and was drilling at 5710 feet to try for oil production. Shell Oil Company's Page 1, mile west of the oil well, developed bad hole after spudding, and will be abandoned since lease contract requires production by August 17. This property and acreage farmed out to Lone Star Gasoline Company was top leased by other parties late last year.

Harold Opp et al's Jackson 1, prospective oil strike for northwestern Schleicher County and near previous tests that gave promise of making producers, filled 2200 feet with oil from Upper Pennsylvanian lime at 4049-61 feet. A string of pipe has been landed to make a production test.

Richmond Drilling Company and Wm. Hannagan's University-Stanolind 1, southwestern Andrews County wildcat, was drilling at 4330 feet. Top of Brown lime was called at 3800 feet, with an elevation of 3325 feet. It is exploring a geophysical prospect that has caused substantial lease bonuses to be paid for protection acreage in recent years.

North Texas Fields

100 barrels per hour well opens pool in Archer County.

Second producer completed in two fields after failures.

Wichita Falls.—Two North Texas lime areas contributed oil producers after the second test in each proved dry, thereby encouraging more development, and east central Archer County is assured of a new oil pool at a record depth for the county.

The new strike was made by G. E. Kadane & Sons' Joe Hemmi 1, NEc Section 60, Block 3, Clark & Plumb Sub-division, 2 miles south of Scotland, after multiple acid treatments of the lower Pennsylvanian lime series at 5174-5294 feet. The hole was plugged back from 5314 to 5294 feet because of bottom-hole water after cementing 7-inch pipe at 5150 feet. The fluid level rose by stages after using 1000 gallons and 5000 gallons of acid. The injection of 10,000 gallons of acid at a maximum pressure of 1700 pounds caused the hole to fill with high-gravity oil in 6 hours. After building up pressure the well flowed 100 barrels of oil via casing in one hour, with gas volume rated at 750,000 feet daily. Tankage is being erected to permit additional production tests. It is 3 miles southwest of a one-well pool in the 4160-foot Strawn, which failed to produce in the deep test, and is 15½ miles northeast of W. B. Hamilton et al's Giddings 2, a 5426-foot failure completed in April, 1935. The latter almost qualified as a small oil well after nitro shot and acid treatments in sandy-lime at 5154-80 feet.

The Griffin-Waggoner pool, located in the northwest corner of Archer County and near Diversion Lake, added its second prolific well in the lower Strawn after a north offset to the discovery proved dry in this zone. Deep Oil Development Company and Eph Griffin's W. T. Waggoner 1, NEc H&TC Section 1, Block 4, south offset to the original strike, developed hole full of oil in 65 minutes after drilling plugs from 7-inch pipe at 4385 feet. The well was shut in 12 hours to build up pressure, then flowed via casing at rate of 166 barrels of 42 gravity oil per hour on brief test. Production is from oil sand, with streaks of saturated

lime, at 4416-39 feet. Top of pay is 14 feet lower than the discovery, completed last March by Eph Griffin et al. The latter's second deep test, located about 1000 feet to the northeast of the discovery, found the Strawn dry in drilling to 4803 feet, but made a small pumper in plugging back to 1639 feet. Deep Oil Development Company acquired ¾ interest in the original deep producer and 240-acres May 1 for $60,000 cash, then announced 3 projected lower Strawn locations.

British-American Oil Producing Company has a second oil well in process of completion from the Canyon out of 4 tests on its large Seymour structure block in eastern Baylor County. F. C. Green 1-C, C SW NW T&NO Section 216, swabbed 20 to 25 barrels of oil hourly after using 2500 gallons of acid in broken saturated lime at 2612-21 feet. It is ¾ mile northeast of a pumper completed last December from Home Creek section of the Canyon at 2580-2605 feet after plugging back from water at 2631-35 feet. The company's Cope 1, ¾ mile southwest of the discovery, was recently abandoned after testing the Ellenberger at 5598 feet, and its Green 1-L, 3½ miles southeast of the original producer, appears to be a failure in the Canyon after plugging back from 4304 feet.

King Oil Company and Phillips Petroleum Company's Wilson 1, SEc Lot 1, Section 23, southwest outpost for the original sector of the Hull-Silk deep field, Archer County, was drilling below the known Strawn pay levels at 4480 feet. Oil saturated lime was logged at 4025-33 feet, and sand section at 4358-98 feet, which correlates with the second pay zone, proved dry. The McCrory one-well pool, northeastern Archer County, entered a bid for a Bend lime producer when W. B. Omohundro et al's Peckham 1, SW NW NW H&TC Section 22, Block 1, encountered nominal oil saturation in core at 5104-10 feet, and is to core deeper. Top of Bend was called at 5095 feet. The test is ½ mile southwest of the 4760-foot lower Strawn discovery pumper, and the only shows of any consequence were found in the upper Strawn. Louis Sikes et al's Anderson 2, NE NE NW Section 38, Ford deep pool, found the water level constant in drilling through the second Strawn pay to 4445 feet, and is plugging back to run pipe for completion.

The entire Pennsylvanian section and the Ellenberger will be explored by a projected 7800-foot wildcat being started by Amerada Petroleum Corpo-

North Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Archer County—		
Bailey & Harvey Drl. Co., Abercrombie-Taylor 1, blk 38	*	1512
Eph Griffin et al, Waggoner Est. 1-B, sec 3	*	1923
Baylor County (Seymour)—		
British-American O.P. Co., Cope 1, sec 220	*	5598
Clay County—		
Norwood et al, Duncan-Texas Co. 4, blk 15	160	1205
Duncan-Texas Co. 5, blk 15	92	1219
Sussex Oil Corp., Shumake 22, blk 4	*	430
Clay County (Wildcat)—		
Burns-Consolidated, Scaling 1	*	4545
Cooke County (Walnut Bend)—		
Cox & Hamon, Neu-Texas Co. 1	444	5133
Cooke County—		
Cree & Hoover, J. A. Becker 1, blk 10	*	1408
Pace Pet. Corp., Welch 3	10	1221
M. Staniforth & Co., Voth 1-A	175	1757
Whitfield-Pearson & Grimes, Voth 8	184	1822
Montague County (Wildcat)—		
Bridwell Oil Co., Reynolds 1, sec 9	*	5403
Jack County—		
Grace & Barrow, Bloodworth 5	5	322
Throckmorton County (Wildcat)—		
Rogers-Steed et al, R. P. Lee 1, sec 197	*	638
Wichita County (K-M-A)—		
Fain-McGaha, Griffin 10-B	1056	3811
Grace-Wood et al, M. A. Love 2	1264	4028
Hamilton & Worsham, Waggoner Bros. 4, sec 13	1080	3839
Hanlon-Buchanan, Fassett-Tuttle 11-B	1008	4001
Ven-Mex Oil Co., Big Wichita River 4-A	1088	3796
Wichita County—		
Fisher-Gilliland et al, C. Birk 12	10	1599
Panhandle Ref. Co., Burnett 12, sec 6	12	1417
Rathke et al, J. C. Rathke 2	2	351
Staniforth et al, George-Reilly-Texas Co. 3	160	1370
Wichita County (Wildcat)—		
Westbrook Oil Corp., L. F. Ramming 2, blk 2	*	1372
Young County—		
F-H-E Oil Co. et al, Jeffery 7-B, sec 41	*	690
R. H. Larsen et al, W. W. Haggard 1, sec 470	*	750
Madden & Hunt, Kunkle 5	18	1133
Worthington et al, Hunt-McClatchey 1, sec 79	*	1151

* Failures; † Junked; ¶ Million cu. ft. gas.

Texas Panhandle Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Carson County—		
Skelly, Schafer 94	594	3207
Gray County—		
Hagy-Harrington & Marsh, E. Bell 2	¶12.8	2715
Magnolia, fee (lse. 227) 29	178	2900
Phillips, Merton 4	144	3204
Hutchinson County—		
Continental, C. S. Carver 1	¶18.4	3235
Phillips, Cockrell 39	355	3064
Whittington Est. & Rubin, Whittenburg 4	¶7	3082
Wheeler County—		
Williams et al, Bentley 4	20	2343

* Failures; † Junked; ¶ Million cu. ft. gas.

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ration on a 6000-acre geophysical prospect in Hardeman County. Derrick has been erected to drill W. M. Rice 1, near NW SE NW W&NW Ry. Section 81, Block H, and 6 miles southeast of Quanah. The same objection is the goal of Magnolia Petroleum Company's Alice Green 1, northeastern Cottle County wildcat now rigging up.

Young Well Makes 1500 Barrels

Carl Leidecker and Bryson Oil & Gas Company's Nall 1, northwest Young County wildcat listed last week as a new pool opener, earned an initial rating of 1500 barrels of oil after using acid in the Marble Falls section at 4425-65 feet. It is located near SWc Section 1997, ½ mile west of Loving. Production will be marketed by trucks at a Graham refinery.

Clay County's enlarged wildcatting campaign met with reverses the past week. L. T. Burns et al's Wynn 1, Lot 34, H. Williams Survey, 4.6 miles southeast of the Burns-Browning pool, halted operations after fulfilling depth contract at 5200 feet. Small shows logged at intervals between 4397-4655 feet failed to respond to drill stem tests. Burns and Consolidated Oil Company's Scaling 1, SEc H&TB Section 6, 1 8/10 miles northwest of the above pool, was abandoned at 4545 feet after yielding only a small show of gas following nitro shot in Strawn at 4448-64 feet. Frabor-Hodges Corporation-Sinclair Prairie Oil Company et al's Kinder 1, NEc Lot 11, Block 2, 4 6/10 miles east of the Burns-Browning pool, gave some encouragement for production in the upper Strawn, and was drilling at 4840 feet. John E. Farrell et al's Malone 1, NEc T&NO Section 12, south of Henrietta, was drilling at 4560 feet.

Flowing producers in the Nocona deep area, Montague County, were increased to 3 the past week, and a northeast outpost was listed as a failure. Stanolind Oil & Gas Company's Zachary 1, west offset to the discovery, flows by heads at rate of 30 to 50 barrels oil daily from Strawn at 4639-61 feet, and may shoot with nitro. Rogers & Rogers' C. Astley-Texas Company 1, north offset to the original producer, increased its yield to 157 barrels oil in 11 hours after making additional perforations opposite the pay at 4649-63 feet. It was plugged back from sulphur water in Ellenberger at 5394-5489 feet. Bridwell Oil Company's Reynolds 1, mile northeast of Nocona, was abandoned in Ellenberger at 5374-5403 feet. Sinclair Prairie Oil Company's Whaley 1, 2 miles east of town, was drilling at 2790 feet, having recovered lost drill stem.

In the Bonita pool, eastern Montague County, Joe Benton & Holmes' Bowers 2, NEc of MEP&P Section 55 and north of their discovery pumper, logged broken oil saturation in Strawn at 2918-52 feet, and was to core ahead before running pipe. E. B. Madden, T. C. Hadley et al's H. Smith 1, H. N. Baker Survey, 2 miles northeast of Bonita, missed the Bonita pay zone, and the hole was junked at 3552 feet. Rig was skidded 50 feet north to fulfill a 4500-foot depth contract.

JOE HOARD, head of the Hoard Exploration Company, is back in Houston after a quick trip to Athens, Greece. A test for oil is being drilled near Athens.

East Texas Fields

Water encroachment in big field continues at normal rate. Spacing decision has slowed drilling on small tracts.

Kilgore, Texas.—Field executives on the ground and in touch with conditions in the East Texas field, reported late last week that there has been no appreciable change in the water situation in the field recently.

The quarterly survey of the water production and the lifting status of wells in the East Texas field prepared in April by the engineers of the Texas Railroad Commission credited 24.5 percent of the completed wells with using artificial lift, and 16.4 percent showing water. The report is based upon information submitted by operators, and does not account for as many water wells and non-flowing wells as private surveys during the same period indicate.

The commission's survey credits the field with adding 162 pumpers during the quarterly period, while total wells produced by air-gas lift declined from 603 to 590. The April report shows a net gain of 245 water wells as compared to a gain of 244 water wells during the preceding quarter, ending January 1. The estimated volume of water produced daily increased 10,051 barrels to a new peak level of 132,858 barrels during the first three months of this year, according to the commission's compilation.

Private surveys compiled on the field during May account for in excess of 7,000 wells utilizing artificial lifts in producing their allowable. This same source estimated the water withdrawals as being approximately 200,000 barrels daily from about 4400 wells, on an increase of approximately 60,000 barrels in the last six months.

Close drilling in big field held in abeyance

Kilgore.—Suspension of drilling on densely developed leases in the East Texas field will become effective upon the completion of tests underway and those obligated by contract until the method of apportioning production between leases is clarified. The federal court decision won June 19 by the Rowan-Nichols Oil Company ordered the Texas Railroad Commission to include other factors along with the prevailing well-potential plan of fixing the allowable of non-marginal wells. If this ruling is upheld by contemplated appeals, the advantage of close spacing of wells will be permanently removed.

The possibility of a production penalty being imposed upon leases that have more than one oil producer for each 5-acre unit is sufficient to discourage further development. Operators temporarily heeded the warning carried by the suit shortly after oral testimony was concluded on February 10. On this date there were 18 rigs running. Operations declined to 2 active rigs early in March, and these were credited to majors' leases. The failure of the court to decide the issue prompt-

East Texas Lifting and Water Status

	January, 1937	October, 1937	January, 1938	July, 1938	October, 1938	January, 1939	April, 1939
Flowing wells making water	1,071	1,047	978	886	843	991	1,031
Pumping wells making water	1,042	1,967	2,389	2,617	2,780	2,830	3,014
Pumping wells immune from water	1,860	2,350	2,521	2,848	2,793	2,794	2,772
Total pumping wells	2,092	4,317	4,910	5,465	5,573	5,624	5,786
Air and gas lift wells making water	71	123	97	149	154	200	221
Air and gas lift wells immune from water	243	307	351	357	366	403	369
Total air and gas lift wells	314	430	448	506	520	603	590
Wells producing Woodbine water	2,151	3,026	3,462	3,657	3,746	3,984	4,244
Wells producing water other sources	33	19	13	6	31	37	22
Total wells making water	2,184	3,137	3,475	3,663	3,777	4,021	4,266
Woodbine water production in barrels	46,250	75,241	85,120	103,128	106,932	122,765	132,811
Water production in barrels other sources	77	28	13	8	33	42	47
Total daily water withdrawal in barrels	46,327	75,270	85,133	103,136	106,965	122,807	132,858
Average daily water production per well	21.42	24.72	24.49	28.16	28.32	30.54	31.14
Total completed wells	22,010	23,722	24,370	25,402	25,717	25,923	26,010
Daily allowable	447,778	480,708	491,852	511,715†	518,051†	522,030†	522,339

† Saturday and Sunday holiday from mid-May through June, and resumed September 3, excepting December 17, 1938.

Note—203 depleted oil wells listed as plugged and abandoned in 1938.

ly gave confidence to many operators, resulting in a revival of development that involved 16 active tests, including 7 for independents, on the weekly survey made prior to the release of the ruling.

No new locations were reported the past week. Field activity declined to 11 drilling tests, with a total of 23 operations credited to the area on the latest survey.

The recent revival of drilling enabled the field to attain a new peak level on total oil producers listed. The latest survey accounts for 26,032 wells, including 205 listed as being dormant, or temporarily off production. This high mark was reached in the face of plugging operations being completed on 6 additional depleted oil wells the past week.

Several large interests that purchased densely drilled leases this year are confronted with the possibility of being penalized out of proportion to the average owner of thickly-drilled properties, since the latter have with few exceptions recovered adequate oil to amortize their lease and development costs. One concern paid approximately $1,000,000 effective February 24, 1939, for 7 leases that have been closely drilled.

Plan Lower Marine test in Joaquin area

Shreveport.—C. M. Cope, who has drilled around the same area before, is planning a Lower Marine test on Pickering Lumber Company land in or near the Joaquin gas/distillate field in Shelby County, Texas, where there are now 3 gas/distillate wells from the Glen Rose. He is seeking to enlist the cooperation of Portex Oil & Gas Company, which owns the 3 present producers; of Pure Oil Company and of Shell Oil Company, all of whom have holdings in Shelby County.

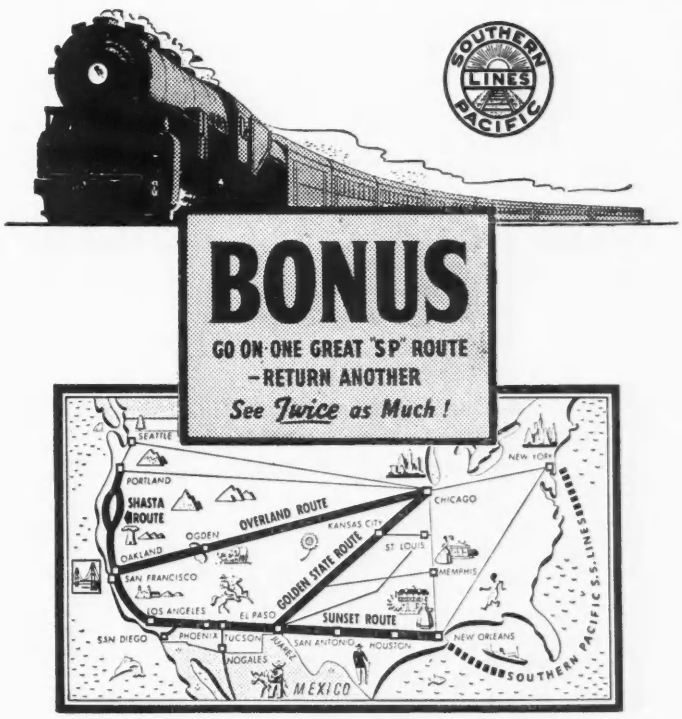
Location was made by W. H. Neel and associates in the Joaquin area, for A. McDaniel A-1, William Snyder survey, which is rigging.

In Harrison County, near Waskom, Arkansas Fuel Oil Company's deep test, Abney B-1, J. J. Blair survey, tested estimated 1,500,000 cubic feet of gas daily when formation tester was run from 4783-4840 feet in the Glen Rose, being open 20 minutes with 3/8-inch chokes at top and bottom. Operators arranged to drill ahead after the test.

East Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Joiner Area—		
Crabtree—Jeffries & Estes, Giles 11 (32.57-ac)	4000	3735
Trico Oil Co., L. J. Pinkston 2	3600	3618
Kilgore Area—		
R. C. Rochelle et al, Geo. Waters 2 (1-ac)	3500	3565
Shell, Watson 89 (385.2-ac)	6500	3640
York & Lawley, S. Williams 2 (2.54-ac)	1200	3665
Longview Area—		
Atlantic, Walker 21 (123½-ac)	3000	3715
Stanolind, Custer 12 (75.34-ac)	1500	3560
Anderson County (Long Lake)—		
H. B. Ownby Drl. Co., Lubben-Tidal 1 (49-ac)	300	5327
Kaufman County (Mabank)—		
Tyler & Smith, Rowe-Baker 2	*	3193
Kaufman County (Wildcat)—		
Griffith & Griffith, Murray 1	*	3512
Leon County (Navarro Crossing)—		
Humble, Polen 1		5884
Marion County (Rodessa-Jefferson)—		
Arkansas Fuel Oil Co., Crawford B-1, A. D. S. Coy survey	424	6163

* Failures; † Junked; ¶ Million cu. ft. gas.



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Corsicana	54.40	64.60
Waco	54.40	64.60
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Southwest Texas Fields

Deep test uncovers new sand on West Ranch in Jackson. Jim Wells County wildcat tests are investigating shows.

Corpus Christi.—West Ranch of Jackson County became one of the major producing factors in South Texas Gulf Coast late in the week when Magnolia Petroleum Company's first deep well on structure found a second producing horizon. The sand corresponds with production found in the Vanderbilt field nearly three miles to the north.

Magnolia Petroleum Company's West 12-A, westernmost well in the field and offsetting the subdivided Bennett ranch, tested salt water at 5132-48 feet in the discovery sand, but found a new pay at 5532-44 feet. On drill-stem test, it recovered 600 feet of pipe line oil and good pressure in 15 minutes. Casing was being run for completion.

About 2½ miles due north of the same well, Lonnie Glasscock found a comparatively poor sand section in the 5100-foot zone, but encountered an oil zone in the Frio at 5530-43 feet. On a 16-hour gauge, the well flowed 57 barrels of pipe line oil through ⅛-inch choke with 450 pounds tubing and 775 pounds casing pressures.

Another ½ mile to the northeast, Encino Gas Company's discovery well of the Vanderbilt field, completed several years ago, made a small producer in a poor sand in the 5500-foot zone. Offsets failed to produce. This would indicate that both the 5100- and 5500-foot sands cover a blanket area of a minimum of 2500 acres and possibly more. Recovery from the 2 zones, combined, may be calculated at near 50,000,000 barrels, placing West Ranch in the limelight as one of South Texas' key important producing areas.

Work has been commenced on a well about 1½ miles northwest of nearest production in the Vanderbilt-West area by John G. Mayo, C. M. Frost and H. R. Cullen. The well, on the Tucker tract, is projected to at least 7500 feet.

About 2½ miles south of production, Nelson, Whitman and associates' Stephan 1 has been abandoned at 6108 feet after running 85 feet lower structurally than Magnolia Petroleum Company's West Ranch 11-A. It tested salt water in all sands.

Jim Wells Discoveries Testing

Jim Wells County is the second most important area from a new discovery point of view with several wildcats preparing to test.

Bridwell Oil Company's Beasley 1, north offset to the discovery of the Ben Bolt field, cored oil sand at 5215-60 feet, in the Frio-Vicksburg zone, and set casing. Offsetting the discovery on the east, Callaway, Reese and Dunn's Smith 1 found sand at 5238-88 feet and made a production test through perforations at 5240-46 feet. It flowed 150 barrels of oil per day through ⅛-inch choke showing 600 pounds working pressure.

H. H. Howell et al's Hoffman 1, ½ mile north and slightly west of the discovery of the Camada field of this county, flowed a slight bit of distillate and a large volume of gas through ⅛-inch choke under pressures of 1400 pounds on tubing and 1600 pounds on casing. It perforated at 5530-40 feet. One mile northeast of the field, Graham et al's Muil 1, drilled to the 7000-foot contract and is awaiting orders.

Texas Gulf Producing Company's Miller 1, discovery of the Reynolds field, perforated too high in the sand at 5143-49 feet and flowed gas. It showed pressures of 1560 pounds on tubing and 1950 pounds on casing. Perforations have been squeezed and new perforations are now being made for another test.

Hunter, Quinn and Rowe's Pundt 1, at Wade City, after drilling to 5411 feet and running electric log, is awaiting orders. It likely will set liner to test several sands in the Vicksburg zone. It is showing at least for a gasser in the 4700-foot sand.

Several miles to the northwest, Randon Oil Corporation's San Antonio Joint Stock Land Bank 1 is an abandonment below 6800 feet. This well showed a thick Vicksburg sand section, but carried salt water. A fault lying between both wells may be a major factor in controlling production through this trend.

Magnolia Petroleum Company's Maun 1, one mile west of the La Gloria field production in Jim Wells County, found distillate production on drill-stem tests at 5885-5902 feet, 5906-11 feet and 6154-60 feet, but is going ahead below 6365 feet.

Nueces County is becoming an important drilling area with a number of wildcats being commenced. One setback for the area was recorded during the week with Texas Conservative Oil Company's Humble 1, one mile northeast of production in the Minnie Bock area showing salt water in the discovery sand topped at 3826 feet, about 20 feet low. The well is drilling ahead.

Seaboard Oil Corporation has commenced a new test 9500 feet northeast of the discovery of the East Mathis field in San Patricio County. The discovery well, Persons 1, flowed 54 barrels on potential test through ⅛-inch choke from perforations at 5260-68 feet.

Project three wildcat tests to Sparta-Wilcox

San Antonio.—Drilling of at least three Sparta-Wilcox wells in wildcat territory along the South Texas Gulf Coast is assured as one location is staked and two more are projected for the immediate future.

W. L. Goldston's C. C. Turk 1, in the G. W. Edwards Survey, Lavaca County, 6 miles east of Ezzell, is moving in for an 8800-foot operation. The test is on a 10,000-acre block.

Wynn Crosby Drilling Company has made a deal with The Texas Company for a farm-out on portion of the Fordtran prospect in the northeastern corner of Victoria County. The deal involves the drilling of a test to at least 8500 feet to test the Sparta-Wilcox zone. Shallow gas previously had been developed on the prospect.

Dirks Brothers made a deal with Mills Bennett Production Corporation and Anderson-Prichard Oil Company for a test to the Wilcox formation just west of Tuleta in Bee County. The well, likely to be carried to 8500 feet, is the first to be drilled to such depth in this sector of the Pettus district.

South Texas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
CORPUS CHRISTI DISTRICT		
Bee County—		
Dirks, Page 1 (WC) T. K. Pilkington sur	*	4120
Brooks County—		
Humble, Mcgill 13 (Kelsey)	500	4728
Mcgill 14 (Kelsey)	500	4730
Jackson County—		
Porter, Pressley 6 (Cordelle)	450	2715
Live Oak County—		
Brauer, Holland, Smith, Bonham 3 (White Creek)	400	1464
Nueces County—		
Shary, Fee 1 (Clara Driscoll)	350	5725
Stanolind, Spessard 23 (Luby)	450	6062
Refugio County—		
Coronado, Rooke 15 (La Rosa)	500	6404
Rooke 30 (La Rosa)	*	6136
Morgan, Mitchell 5-D (Refugio)	50	6424
San Patricio County—		
Kepley, Brown 1 (McCampbell)	1000	7254
Landrum-Jones, Brown 3 (McCampbell)	1100	7155
Morgan, Benson 1 (WC), John Pollan sur	*	5489
Plymouth, Solar-Countiss 1 (East White Point)	500	5673
Rantex, Wheeler 1 (McCampbell)	1050	7190
Seaboard, Persons 1 (WC), East Mathis area	100	6348
Spiller, Mills 1 (McCampbell)	*	7180
Sun, Kirk 1 (East White Point)	400	5682
Welch, Fee 4 (East White Point)	450	5680
Victoria County—		
Barnsdall, McFaddin 30 (McFaddin)	425	4409
LAREDO DISTRICT		
Duval County—		
Hiawatha, Southland 14 (North Sweden)	400	4794
Magnolia, DCRC 27 (201) (Eagle Hill)	520	2060
Miller, Miller 9 (Longhorn)	500	5676
Navarro, Mew 2 (Fitzsimmons)	350	4343
Parr, Villareal 1 (WC), North Sweden area	*	6015
Rowe & Scheig, Weil 1 (WC), sur 567	*	2752
McMullen County—		
Collum, Schroeder 1 (WC), South Calliham area	*	1608
Gilcrease, Shiner 1 (WC), sec 74	*	2317
Ricker, La Chusa Land 1 (WC), sec 52	*	2218
Starr County—		
Stevens & Clopton, Green & Manning 1 (WC) share 85, por 81	*	1702
Zimmermann, Wood 4 (Ricaby)	*	1803
Webb County—		
Schimmerl, Laurel 5 (North Killam)	*	Ien.
Zapata County—		
Buffalo, Hinnant 9-C (Mirando Valley)	98	1989
Carter & Rubsamen, Lopez 2-A (S. Mirando Valley)	110	1831
Lopez 3-A (S. Mirando Valley)	48	1819
Nordan & Morris, Haynes 16-C (Comitas)	47	1233
Haynes 17-C (Comitas)	*	1330
SAN ANTONIO DISTRICT		
Caldwell County—		
Wiegand, Briscoe 6-A (Salt Flats)	35	2727
Guadalupe County—		
United North & South, Dix 12 (Darst Creek)	261	2542
Milam County—		
Edwards, Camp 2 (WC), D. Robinson sur	*	1910
Jones, Coffield 7	3	694
Wilson County—		
Schneider, Hierholzer 1 (WC), Salinas sur	*	1208

* Failures; † Junked; ¶ Million cu. ft. gas.

Texas Gulf Coast

South China area gets new oil field.

New gas field found near Collegeport.

Houston.—A new oil field was assured for the South China area, Jefferson County, June 23, when a drill-stem test made on Geo. Echols, Hebert & Smith's Fontenot 1, H. & T. B No. 107, recovered pipe line oil from lower Frio formation. Screen and liner are being run for a production test.

Casing was perforated in the South China wildcat with 40 shots from 7872 to 7885 feet. A 7-minute drill-stem test, made through a ⅜-inch choke on bottom and a ¾-inch choke on top of the testing tool, recovered 13 stands of pipe line oil and a 15-pound pressure. The well flowed oil in 40 minutes after the testing tool was closed. Prior to the above test, the casing was perforated from 7885 to 7896 feet. After washing the well for 2 hours, it flowed for 9 hours at the rate of 10 to 12 barrels of fluid per hour through ¼-inch choke, 80 percent salt water and 20 percent oil. Tubing pressure was 225 pounds and casing pressure was 350 pounds. The well was killed and retested. The hole was originally drilled to 8755 feet and 5½-inch casing was set at 8007 feet.

A new gas producing field was opened at Collegeport, Matagorda County, last week when Continental Oil Company's Savage 1, D. Yeamans Survey, flowed dry gas through ¼-inch choke with a pressure of 825 pounds. The hole was drilled to 5810 feet in broken sand. Six and one eigths inch casing was set at 4225 feet.

Stanolind Oil & Gas Company will make a production test of Flowers 1, I. & G. No. Section 7, near Moratha in Liberty County. The hole is bottomed at 9109 feet and 5½-inch casing, set at 8749 feet, was perforated at 8700-05 feet. Flowers 1 cored broken oil sands at 8100 to 8104 feet; gas sand with a salty taste at 8145 to 8155 feet and sand with no shows at 8155 to 8170 feet. Side wall cores taken at 8525 to 8532 feet, 8590 to 8600 feet, 8615 to 8625 feet, 8700 to 8720 feet, and from 9065 to 9075 feet showed salt water sands. An electrical log was run in the hole before setting casing.

On the flank of the Conroe field, Montgomery County, E. I. Thompson's Granger 1, T. & N. O. No. 14, was drilling in shale below 8300 feet. No information is being given out on the wildcat but it is reported that a show of gas was logged. Conroe is the largest producing field (17,000 acres) in the Texas Gulf Coast and discovery of Wilcox oil would be extremely important.

Another production test will be made of R. L. Peveto's McWhorter 1, Boatwright League, 6 miles southwest of Madisonville, Madison County, which last week showed some oil, gas and fresh water. The well flowed 500,000 to 1,000,000 cubic feet of gas and fresh water at a 100-pound pressure through 18 perforations at 1628-42 feet. When killed and perforated with 12 shots at 1169-77 feet, it flowed fresh water with a scum of oil. The wildcat is reported to have cored oil sands at 1170 feet, 1180 feet, 1610 feet, 1630 feet, 1640 feet, and 1642 feet.

Southeast of production at Aldine field, Harris County, Earl Hankamer's Rowland 1 was to make another production test after the first test showed gas in a new sand. The well was perforated with 23 shots from 7165 to 7170 feet, and flowed gas and distillate through a 3/16-inch choke with a tubing pressure of 2325 pounds and a casing pressure of 1525 pounds. The oil tested 54 gravity. Perforations have been squeezed and casing will be perforated higher up the hole. The field's regular producing horizon is found at 6824 to 6834 feet.

Humble Oil & Refining Company has discovered a new gas and distillate sand at Cheek field, Jefferson County, but has decided to core deeper. The sand is about 200 feet deeper than the regular pay. B. A. Steinhagen 1, W. Carr Survey, was drilled to 7927 feet and seven-inch casing was set at 7912 feet. Two and one half inch tubing was hung at 7910 feet, where the well flowed 629,800 cubic feet of gas and ½ barrel of wash water per hour with a tubing pressure of 1720 pounds, and casing sealed. The next day the well flowed 48 barrels of distillate daily and 939,000 cubic feet of gas per hour through a 3/16-inch choke with a gas/oil ratio of 39,125 to 1. Tubing pressure dropped from 1500 pounds to 700 pounds. The well was killed and will be drilled deeper.

On the flank of Esperson dome, Liberty County, General Crude Oil Company's Esperson Fee 3-B, 920 feet east and 580 feet north of Fee B-1, the discovery well for the deep sand, was drilling in shale at 7350 feet at the end of the week after coring 11 feet of oil sand at 7211 to 7222 feet.

Standard Oil Company of Texas' State 46-120, outpost test at Cedar Point, Chambers County, was abandoned last week at 6575 feet after logging salt water sands in Miocene and Oligocene formations. Top of the salt sand was found at 6477 feet.

Kirby Petroleum Company's second well on the north side of Fairbanks field, Harris County, is preparing to core for the Fairbanks producing sand. Hillebrenner Unit 1, T. M. Dorsett Survey, was down to 6760 feet in sand topped at 6757 feet.

Woodland Oil Company's Berg 1, in the Needville area, H. & T. C. No. 25, Fort Bend County, was down to 7015 feet at the end of the week and was running 4225 feet of 9⅝-inch casing. The wildcat has cored sand and shale with oil odors at 6330 to 6335 feet and from 6654 to 6676 feet. The hole will be carried deeper.

On the Robertson Lake prospect, Chambers County, Plymouth Oil Company's Wilborn 1, W. Moore Survey, was drilling in shale at 6859 feet after coring salt water sands at 6649 to 6650 feet and from 6699 to 6704 feet.

Gasser opens new Duval field, to rework for oil

San Diego, Texas.—Discovery well of the Chiltipin field of Duval County is a gas producer, but is expected to be immediately reworked in an effort to bring about an oil flow. William M. Nicholls' J. T. Graham 1, in southern portion of Section 572, flowed a large volume of gas and sprayed a slight amount of gas through ⅛-inch choke, developing 1440 pounds tubing and 1660 pounds casing pressure. Casing had been perforated at 4784-90 feet. It will be reshot at about 4790-95 feet for recompletion.

In Webb County, potential test has been made on Magnolia Petroleum Company's Volpe-Benavides 1, discovery well of the Volpe field, a Mirando-sand producing area. The test made 90.61 barrels per day on pump from sand at 2458-66 feet.

M. M. Miller and Sons have opened another oil sand for the Longhorn field of Duval County, the newest being in the Cockfield formation. Miller 8, Section 28, found sand at 5527-35 feet and pipe was set on bottom at 5615 feet. It will be perforated for completion.

American Liberty buys Texas City refinery

American Liberty Oil Company, Dallas, has contracted to purchase controlling interest in Southport Petroleum Company's 20,000-barrel daily capacity crude skimming and cracking plant at Texas City. The deal has been underway for several weeks, and will be completed about June 30, according to Clint W. Murchison, vice president of American Liberty Oil Company, which is buying and producing in excess of 50,000 barrels of crude daily in Texas and Louisiana. A refinery and producing properties held by Southport Petroleum Company in the East Texas field are not involved in the trade.

Southport Petroleum Company of Delaware will be incorporated by the newly formed partnership to operate

Texas Gulf Coast Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Anahuac—		
Gulf, Peterson 2	480	7162
Cedar Point—		
Standard of Texas, State 46-120	*	6575
Eureka—		
M. G. Hanshro et al, Winships 1	*	8256
Fairbanks—		
Margay Oil Co., White 1	78	6848
Friendswood—		
Humble, West Fee 21-B	480	6065
West Fee 29-B	576	6040
Hastings—		
Stanolind, Moore A-2	430	6102
Ware 3	623	6080
Hitchcock—		
Maco Stewart, Fee 12	*	5214
Port Neches—		
Texas Co., Starks 7	198	5947
Silsbee—		
Humble, Kirby 4	354	6940
Thompson—		
Gulf, Hammerstrom 3	62	5356
Tomball—		
Humble, Henrichs 4	51	5585
West Columbia—		
Mike Hogg, Fee A-1	*	2011
Texas Co., Abrams 32	452	5652
Goldman 5	278	5368
Withers—		
McDannald Oil Co., Clayton-McCracken 1	85	5547
Texas Co., Broussard 11	106	5547

* Failures; † Junked; ¶ Million cu. ft. gas.

the Texas City plant. Cornelius Kroll, president of Southport Petroleum Company of Texas, will also hold the same position with the Delaware corporation.

The coastal plant has been in continuous operation for several years since adding a 12,000-barrel daily capacity cracking unit, using approximately 8000 barrels daily obtained from South Louisiana on a two-year contract. Oil purchases are also made from South Texas fields.

Surplus crude handled by American Liberty Oil Company through American Liberty Pipe Line Company, an affiliated unit that operates a trunk line from the East Texas field via Conroe to Norsworthy terminal on the Houston Ship Channel, will be available for the Texas City plant. The oil can be barged from Norsworthy to Texas City for one cent per barrel, according to reports.

Louisiana makes claim against Texas Company

Attorney General David M. Ellison of Louisiana at Baton Rouge June 22 announced that the state would demand from The Texas Company over $1,000,000 cash and 9 producing oil wells, charging that an invalid interpretation had been made November 17, 1928, of a lease granted September 13, 1928, on state owned lands. The interpretation was made by agreement between Carroll S. Mayer of Baton Rouge, the lessee, and the late Huey P. Long, then governor.

The tract involved in the controversy consists of 60,000 acres on public hunting grounds near the mouth of the Mississippi River, in what is known as the Garden Island Bay field.

Mayer paid $65,000 for the lease and sold it to The Texas Company for $200,000, it was stated. The Texas Company now has 33 producing wells on the tract.

Magnolia allowable cut one third

In an order issued by the Arkansas Oil & Gas Commission June 22 after an open hearing, the daily average allowable for wells in the Magnolia field, Columbia County, Arkansas, was cut one third to a per well allowable of 200 barrels. The reduction is effective July 1.

Under the present allowed production, the commission announced, "The correlative rights and opportunities of each owner of oil and gas in the Magnolia field have been abused due to non-uniform, disproportionate and unratable withdrawals tending to cause undue drainage between tracts of land."

The commission ordered that every person now or hereafter engaged in purchasing and selling oil in the field shall purchase the allowed production of the wells without discrimination in favor of one purchaser against another.

Minnie Bock hearing set for June 26

The Texas Railroad Commission has scheduled a hearing for June 26, at Austin, to consider operating rules for the Minnie Bock field in Nueces County.

The commission likewise issued an emergency 20-acre spacing rule to be in force prior to the hearing.

South Louisiana

Wilcox defined to southwest at Villa Platte.

Eola looks good to east and northwest.

New horizons promised several producing fields.

Lake Charles. — Wilcox production was defined on the southwest side of Villa Platte field, Evangeline Parish, when Continental Oil Company abandoned Vidrine 1 below 10,500 feet. It was perforated from 10,350 to 10,360 feet and from 10,380 to 10,389 feet and a drill-stem test showed 11 stands of salty mud, no oil or gas. Vidrine 1 was the first well drilled to the Wilcox at Villa Platte and was temporarily abandoned without running an electrical log. When 2 other wells were drilled to the formation the company went back in the hole and side tracked and recored the Wilcox. This log did not look as good as the logs of Tate 3 and Haas 3, but did warrant a test. Vidrine 1 also did not have the thickness or the saturation found in the other 2 wells. Continental Oil Company opened Wilcox production the previous week when Haas 3 was completed for 312 barrels daily when casing was perforated at 10,085 feet. There is only one other well in the field which has cored the sand and that is Tate 3, which was plugged back and completed at 8900 feet. The Tate 3 logged thicker, more saturated and better sand than the other 2 wells. This is the first dry hole at Villa Platte out of nearly 50 completions.

Three fourths mile northwest of production at Eola field, Avoyelles Parish, Sid Richardson's Pierce 1 logged oil sands in Wilcox formation higher than any other well in the field, indicating the field will go a considerable distance northwest. Pierce 1 topped the Wilcox at 8406 feet and was still coring oil sands at 8520 feet.

East of production at Eola, Gulf States Exploration Company's Haas Investment Company 1 logged oil sands at 8570 to 8577 feet last week that showed commercial possibilities. The hole is bottomed at 8584 feet and 5½-inch casing has been set for a production test. An electrical log of the oil sands showed three ohms on the third curve and five ohms on the fourth curve. A 30-minute drill-stem test was made at 8570 to 8584 feet through ¼-inch chokes. The well showed a 120-pound pressure, 1250-pound bottom-hole pressure, 16 stands of pipe line oil and one stand and one single of oil cut mud.

Prospects for Wilcox sand production on the Merryville prospect in Beauregard Parish appeared small last week as Atlantic Refining Company's Riceland 1 reached contract depth of 8500 feet. It cored hard sand and shale from 8112 to 8150 feet, and then 14 feet of sand that was dry. An electrical log is being made of the well, and a sand that showed gas and distillate at 7585-7606 feet may be tested.

In the Banister area of Beauregard Parish, The California Company's Long Bell Lumber Company 1 was shutdown at 10,573 feet. This wildcat cored salt water in the Wilcox formation.

The Texas Company was assured a new producing area in St. Charles Parish, last week when L. L. E. Paradis 1, Paradis prospect, made a test at 8695 to 8730 feet that showed gas and distillate. A number of tests have been made on the wildcat and each time it has flowed gas and distillate. The well will be killed to make a test around 9895 to 9915 feet. While testing at 8730 feet the wildcat flowed 96 barrels of distillate daily and a large volume of gas.

Gulf Oil Corporation is preparing to make a production test of a new deep sand at Grand Bay field, Plaquemines Parish, in Grand Prairie Levee Board 4-A, which cored oil sands at 6137 to 6147 feet; 8447 to 8450 feet and from 9678 to 9700 feet. Seven-inch casing has been set at 9664 feet and a test will be made of the 9678-foot horizon. If this is not productive the hole will probaby be plugged back for other tests up the hole. Grand Bay is producing from 6150 feet and 7150 feet. The same operator's State Grand Bay 2 was drilling in shale at 10,252 feet at the end of the week and is below the producing sand for the field. However, the well cored oil sands at 8119 to 8122 feet; 8366 to 8374 feet; 8335 to 8338 feet; 8539 to 8541 feet. Nine and five eighths inch casing was set at 8459 feet.

A new oil sand was discovered at Roanoke field, Jefferson Davis Parish, by Humble Oil & Refining Company's Taylor 4 at 6268 feet, the shallowest sand in the field. The hole was plugged back to 6245 feet from 8825 feet, and perforated from 6264 to 6268 feet. A 15-minute drill-stem test showed 2680 feet of 31.8-gravity oil and 1260 feet of oil

South Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Baton Rouge—		
Geo. Echols, Duplantier 1	240	6502
Chalkley—		
Shell, Hanzen 1	*	9500
Caillou Island—		
Texas Co., State Caillou Island 1-B	*	5653
Jennings—		
Gulf, Arnaudet 41	601	7270
Port City Oil Co., Syndicate Fee 24	20	2832
Lake Barre—		
Texas Co., State 43	*	4122
Lake Long—		
Fohs, State 8	130	9906
Lake Pelto—		
Texas Co., State 25	648	5030
New Iberia—		
Lisbon-Iberia Oil Co., Gulf Fee 7	326	5995
Port Barre—		
Western Gulf, Watkins 1	*	5343
Sulphur—		
Union Sulphur, Ulrich 3	*	6776
Villa Platte—		
Continental, Vidrine 1 (wo)	*	10,500
L. Haas 3	367	9073
Texas Co., Norman Fee 1	40	9028
Vinton—		
N. D. Mayfield, Lyons 1	*	4247
Lafourche Parish—		
Gulf, Grandison 1, Grandison prospect, 14-20s-23e	*	12,013

* Failures; † Junked; ¶ Million cu. ft. gas.

cut mud. Two and one half inch tubing was hung at 6235 feet and the well came in flowing 376 barrels of 34.4-gravity oil daily through a 3/16-inch choke with a tubing pressure of 800 pounds. Bottom-hole pressure was 2875 pounds. Roanoke has been producing from 7600 feet, 7778 to 7934 feet, 8644 to 8730 feet and from 8810 to 8856 feet.

On Reddel prospect in Evangeline Parish, Continental Oil Company's Manuel 1 was down to 10,860 feet in shale the past week and according to reports has logged some sands with oil shows. An electrical log showed 11 ohms on the fourth curve from 9350 to 9360 feet; eight ohms on the third curve and 16 ohms on the fourth curve from 9850 to 9864 feet; 10 ohms on the third curve and 20 on the fourth from 9880 to 9915 feet.

North of production at Bancroft field, Beauregard Parish, Republic Production Company's Lutcher Moore 7 is bottomed at 8000 feet with 5½-inch casing set at 7973 feet. The operators plan to make a production test of a new sand, at 7901 to 7908 feet, which is believed to be Sparta formation. This field has been producing from Cockfield sands around 7800 feet.

Union Sulphur Company's Tietje 1, southwest of South Elton field, Jefferson Davis Parish, was tested again last week and showed salt water and oil. Cement retainer has been set at 7634 feet and casing will be perforated again. Last week the casing was perforated with 40 holes from 7828 to 7838 feet and it flowed five percent oil and 95 percent salt water. The company has made location for Tietje 2, 330 feet east and 2310 feet south of the northwest corner of Section 36-7s-4w.

The Texas Company's L. L. & E. Golden Meadows 1 at Golden Meadows field, Lafourche Parish, showed gas in a new horizon last week but the sands were cemented off for another test. casing was perforated with 90 shots from 4400 to 4430 feet, and during a 3½-hour drill-stem test the well flowed dry gas through ¼-inch chokes. Pressures were 1300 pounds. Cement retainer was set at 4400 feet for another test. This wildcat was drilled below 10,000 feet and has plugged back and made over a half dozen tests of new horizons.

Terouche Oil Company's Cheramie 1 at Golden Meadows logged a shallow sand last week at 4406 to 4422 feet and then drilled into salt water at 4431 feet. The well has been shut down and the operators may run casing for a production test of the show. The field is producing from sands at 7900 feet and 8500 feet.

Lake Long field, Lafourche Parish, was extended ¼ mile east last week when Fohs Oil Company completed State Lake Long 8 when casing was perforated at 9892 to 9906 feet. It flowed 130 barrels of distillate daily through a 13/64-inch choke with a tubing pressure of 3600 pounds. Location has been made for State Lake Long 9, 660 feet west and 660 feet south of State Lake Long 6.

A new producing horizon may be opened at the White Castle field, Iberville Parish, if Shell Oil Company's Wilbert 13 is productive from 8777 feet. The field is producing below 8900 feet. Wilbert 13 was drilled to 8878 feet and an electrical log was run to 8860 feet. In sands at 8695 to 8770 feet the log showed from five to 10 ohms on the third curve. Oil sands were cored from 8694 to 8773 feet.

A new producing horizon was discovered at Lake Pelto field, Terrebonne Parish, last week by The Texas Company when State Lake Pelto 25 came in as one of the best producers in the field. It cored oil sands at 4996 to 4918 feet and 7-inch casing was set at 5030 feet. A large section of screen was set and the well came in flowing 650 barrels of 27.9 gravity oil daily through a ¼-inch choke with a tubing pressure of 700 pounds.

Northwest of production at Abbeville, Vermilion Parish, Continental Oil Company is testing Duhon 1 in a new horizon. Casing was perforated with 24 shots from 10,159 to 10,165 feet, and a five-minute drill-stem test made through ¼-inch chokes recovered ½ gallon of distillate. After running tubing the well flowed 18 barrels of 54.8 gravity oil through a 5/32-inch choke with a tubing pressure of 3750 pounds and a casing pressure of 3900 pounds.

In Orleans Parish, W. T. Burton's L. & N. R. R. 1 attracted considerable attention last week when oil and gas was shown in the mud ditches. The hole is bottomed at 10,138 feet and cement retainer was set at 8800 feet and 300 sacks of cement was squeezed back into the lime formation. The cement was drilled out and the operators lost the hole below the casing and are now drilling in a side-tracked hole at 9400 feet in hard lime. The operators experienced considerable trouble with this wildcat some time ago when lime was logged and returns were lost.

North Louisiana

Shreveport field again enters completion column

Shreveport. — The fortieth well for the Shreveport oil field, which has been out of the completions column for several weeks, was apparently in course of completion in Wardell Oil Company and associates' Robert Mandell 1, W½ SE SE 26-18n-14w, in the northeast end of the field and was being completed at 5556 feet in 8 feet of saturation. It was flowing ungauged into pits June 22.

J. T. Driscoll and associates aban-

North Louisiana Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Bienville Parish (Bisteneau)—		
Arkansas-La. Gas Co., O. G. Thomas B-1, 15-16n-10w	¶40	5302
Caddo Parish (Pine Island)—		
Texas Co., Caddo Mineral Land Co. 52, 23-21n-15w	100	1643
R. W. Williams, Ark. Fuel No. 3, 25-21n-16w	50	2300
Joe Strahan, W. P. Stiles 1, 29-21n-16w	40	2397
Hart 2, 29-21n-15w	40	2396
Natal Oil Co., Stiles 5, 27-21n-16w	10	1031
Midfield Oil Co., Muslow B-2, 6-20n-15w	10	1606
Hamilton & Stone, Atlantic 1, 2-20n-16w	10	1605
Caddo Parish (Wildcat)—		
J. Thomas Driscoll et al, J. D. Woolworth 1, 19-18n-14w	*	5608
Claiborne Parish (Homer)—		
Maritzky & Bibby, McClung 3, 29-21n-7w	5	1450

* Failures; † Junked; ¶ Million cu. ft. gas.

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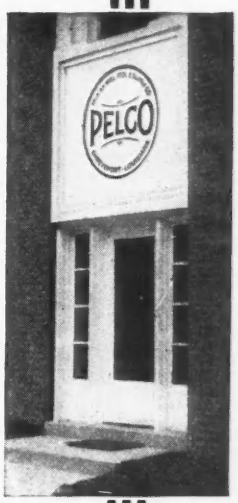

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New Iberia—Monroe
Cotton Valley—Greggton
Magnolia—Houston

doned J. D. Woolworth 1, NE SE 19-18n-14w, at 5608 feet in the Pettet (basal Glen Rose) lime. With elevation of 196 feet this test topped first anhydrite at 4135 feet and logged massive anhydrite from 4390-4655 feet; logged the Jeter sand at 4868 feet and topped the Pettet at 5602 feet.

The seventh wet gas well from the basal Glen Rose lime (Pettet) in the Lake Bisteneau field, Bienville Parish, was completed by Arkansas-Louisiana Gas Company at O. G. Thomas B-1, SE SE 15-16n-10w, at 5302 feet, making 40 million cubic feet daily. One mile west of production in this field and across the line in Bossier Parish, Union Producing Company made location for Lincoln Land Company 1, C 17-16n-10w. The same company also made location for another test in the Sugar Creek field where a few oil wells were completed in the Travis Peak but where Glen Rose gas wells are the more common. This location is Tony Darrett 3, Section 5-19n-5w, in the same section where this company with Standard Oil Company of Louisiana and Sugar Creek Syndicate last year drilled a 10,000-foot test that was lost due to fishing job.

On the west side of the city limits of Shreveport and in the vicinity of other wells that have given trouble at the same horizon, the Tokio, C. H. Lyons' Agurs 1, NW SE SE 34-18n-14w, blew out at 2800 feet but was brought under control and later was drilling below 3150 feet.

Arkansas Fields

Magnolia field production extended over mile west

El Dorado, Ark.—Western limits of the Magnolia (Kerr-Lynn) field were extended 1¼ miles west last week when Grady H. Vaughn and Oliphant Oil Company completed J. Jones 1, C NE NE 21-17s-20w, Columbia County, flowing 27½ barrels of oil per hour through 12/64-inch choke from 7562 feet in 65 feet of saturation, topped at 7497 feet. It is estimated that the thickness of the Permian lime above the water level is 170 feet.

With elevation of 356 feet this outpost well topped first anhydrite at 3226 feet and logged base of this formation at 3405 feet; topped the James lime at 3965 feet; topped the Travis Peak at 4335 feet, and topped the lower Marine lime at 5530 feet. In flowing 27½ barrels per hour, casing pressure was 1400 pounds and tubing pressure, 1350 pounds. This was the Magnolia field's thirty-third oil well, another having been completed inside the field during the last week. Two other operations there have reached the Permian horizon and set final strings of casing.

Two new locations were made in the Lewisville field, LaFayette County, where two small oil wells completed in the Hill horizon were followed by 2 dry holes below the fault there. Last week two previously made locations were abandoned as on the downthrow side of the fault and two others staked, presumably on the upthrow side. All are operations of East Texas Refining Company and of Erwin & Leach.

Almost midway between the Village field, Columbia County, which produces from the Permian lime, and the Schuler field, Union County, that produces from the Travis Peak, Lower Marine and Permian lime, Twin Cities Syndicate (J. C. Buckbee) made location for a contemplated Permian lime wildcat test, H. J. Hollingsworth 1, C NW SW 31-17s-18w, Columbia County. In Bradley County, where one Permian lime wildcat location was made only recently, plans went forward for another on a block around Section 12-16s-12w, on the west side of the old Marsden prospect of Phillips Petroleum Company. The test will be drilled for C. H. Murphy, who has extensive holdings in this county. Amerada Petroleum Corporation several weeks ago made location for its Permian lime test in Bradley County after extensive geophysical exploration.

Marine Oil Company's Fee 7, SE NE NE 20-18-17, edge test at Schuler, Union County, which with elevation of 265 feet topped the lower Marine (Jones sand) at 7584 feet and the Permian (Reynolds) lime at 7658 feet, after perforating from 7592 to 7625 feet with 215 shots, swabbed 84 barrels of oil in 8 hours through ½-inch choke and then flowed 20 barrels per hour for a time through casing but later settled to 150 barrels daily. Almost one mile south of Schuler production Edwin M. Jones and associates' Murphy Land Company C-1, NE NE NE 24-18-18, was testing at 7640 feet. With elevation of 217 feet it topped the Lower Marine (Jones sand) at 7560 feet.

One the edge of the lenticular Rainbow City (Champagnolle) field, Union County, J. R. Lockhart's Porter Jerry 1, NE SE 15-17-14, claimed a good oil showing in a drill-stem test of the Graves sand at 2612 feet. Normal producing horizons at Rainbow City are the lenses at contact of upper and lower Cretaceous at 2900-3350 feet.

Arkansas Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Calhoun County (Wildcat)—		
J. R. Lockhart et al, Southern Kraft 1, 17-14s-13w	*	5095
Columbia County (Magnolia)—		
Atlantic Ref. Co., Levi Garrett E-1, 24-17-20	524	7640
G. H. Vaughn & Oliphant Oil Co., J. Jones 1, 21-17-20	660	7562
Miller County (Wildcat)—		
J. K. Wadley & C. E. Johnson, M. A. Jacobs Est. 1, 33-18-26	*	4002
Nevada County (Troy)—		
Benedum & Trees Oil Co., Grove L&T Co. 1, 10-14-20	80	2109
Berry Asphalt Co., Grove L&T Co. 1, 4-14-20	30	2122
Union County (Schuler)—		
Marine Oil Co., Fee 7, 20-18-17	150	7690

* Failures; † Junked; ¶ Million cu. ft. gas.

Louisiana permits

Shreveport.—Twenty-six drilling permits were authorized last week by the Louisiana Conservation Commission of which 5 were in North Louisiana, divided among the following parishes: Caddo, 3; Union, 1; and Webster, 1. The 21 in South Louisiana were in the following parishes: Avoyelles, 1; Beauregard, 1; Calcasieu, 2; Cameron, 1; East Baton Rouge, 1; Iberia, 1; LaFourche, 10; Plaquemines, 1; Terrebonne, 2; and Vernon, 1.

Plan another deep test in Florida Everglades

Pensacola, Fla.—Swift Creek Oil Company was rigging up last week for Howell Turpentine Company 1, C 15-4s-19w, Baker County, near the Lake City-Jacksonville highway, on a block of approximately 50,000 acres located in the general area near Lake City, Olustee, and Lake Butler, and being in parts of three counties, including parts of townships 4 and 5 south, ranges 18, 19 and 20 east.

William G. Blanchard has announced plans for a 10,000- to 12,000-foot test in Monroe County, in the Everglades, 44 miles west of Miami, and 3 or 4 miles from the recently abandoned test of Peninsular Oil and Refining Company in Section 6-55s-34e, Monroe County, which was dry at 10,006 feet. This test is said to have started in Caloosahatchee Marl and was abandoned in the equivalent of the Edwards formation of Texas after penetrating sections of limestone, chalk and anhydrite.

The Florida State Geological Survey has been given samples of both cuttings and cores of this test by Robert B. Campbell, president of the company drilling the test, and State Geologist Herman Gunter plans to make the samples available to geologists.

Florida Oil Discovery Company's Sholtz 2, SW SW NE 9-15s-13e, Levy County, is drilling below 5019 feet in blue shale. Florida's only other active drilling operation, St. Mary's River Oil Corporation's Hilliard Turpentine Company 1, NW NW SE 19-4n-24e, is drilling red shale below 4676 feet.

Two Mississippi wildcats abandoned

Jackson, Miss.—Two wildcat tests were abandoned last week in Mississippi, one in Hinds County, and the other in Lowndes County. The former is Cleve Love and associates' S. F. Johnson 1, NE SE 29-6n-1w, near Clinton; after drilling to 6484 feet was plugged back to 3355 feet to test a gas showing at 3300 feet but as soon as tubing was run to 3200 feet and swabbing begun, salt water appeared when swab reached 1500 feet.

In Lowndes County, Ryan & Anderson's Swoope 1, NE NE 3-19s-18w, was abandoned at 4010 feet but may be deepened. Operators plan three tests on this block, one of them a deep test, and will run geophones. Either this test will be deepened or one of the subsequent tests will be a deep one.

Union Producing Company's C. B. Box 1, C SW 15-14n-4w, wildcat in the delta section, Humphreys County, cored and drilled ahead after logging igneous rock at 3651 feet; elevation is 105 feet.

Union Producing Company, George Hunt and associates and Barnsdall Oil Corporation continue to take leases around what is called locally the Tinslay Dome, Yazoo County, delta section, in township 10 north, ranges 2 and 3 west.

Mississippi Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Hinds County (Wildcat)—		
Cleve Love et al, S. F. Johnson 1, 29-6n-1w	*	6484
Lowndes County (Wildcat)—		
Ryan & Anderson, Swoope 1, 3-19s-18w	*	4010

* Failures; † Junked; ¶ Million cu. ft. gas.

New Mexico Fields

Lea County drilling activity again takes upward trend.

Check shows fields falling behind their production quota.

Hobbs, N. M.—Lea County activity scored a revival through the authorization of 12 tests the past week, being double the volume reported the two previous weeks. Majority of the new tests were assigned to the sandy-lime belt in the east portion of the county.

Appearance of water in Magnolia Petroleum Company's State 1-S, C SE SW 34-16s-34e, Lea County wildcat and 3¼ miles northwest of the Vacuum field, at the projected producing horizon eliminates this prospect. Lime at 5085-92 feet tested 10 gallons of water hourly. The test was drilling at 5100 feet to ascertain the main water level. A brown lime section was logged at 4886 feet, and gray lime at 4951 feet, with an elevation of 4090 feet.

Pipe-line proration and the allocation of production allowables to wells that cannot make their quota is causing Lea County to fall considerably short of the daily output authorized by the conservation commission. The deficit reached a new peak level during April, according to tabulation completed the past week by C. G. Staley, field representative of the Lea County Operators Committee. Exclusive of the Maljamar field, which is assigned to the Artesia district for proration purposes, Lea County's fields were given a total allowable of 3,081,855 barrels in April, and production and pipe-line runs indicated a shortage of 238,325 barrels, with two areas charged with an overage of 319 barrels.

Vacuum field registered a shortage of of 86,879 barrels, or 32½ percent below the allotted production quota. Inability of wells to produce their allowable contributed to the deficit, but the greatest portion of the credited back allowable arose through the failure of the two purchasers that serve the area through the facilities of a common carrier outlet to make adequate crude nominations. This condition has prevailed since late last year in the face of numerous completions, and is due to be corrected shortly by the entrance of another buyer. The Penrose sandy-lime area was allowed 176,775 barrels production in April, and showed a shortage of 38,130 barrels for the month. The Monument and Eunice fields failed to produce their quota by 26,890 barrels and 18,591 barrels, respectively.

Three new operations were credited to the Penrose field. Osage Drilling Company's Christmas 1, NE NE SE 17-22s-37e, is on an 80-acre lease farmed out by Repollo Oil Company, with the latter retaining an over-riding royalty. J. C. Clower et al's Christmas-Gulf 2-B, near SE NE SW 28-22s-37e, spudded with machine, and location was made for Peters and Elder's Brunson 2, SW SW SW 3-22s-37e. In the prolific lime area situated immediately east of this field, Repollo Oil Company's State 3-D-157, NW NW SE 12-22s-37e, was drill-

New Mexico Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Eddy County—		
Allen-Fair et al, State-Snowden 1, se ne se 36-17s-29e	100	2775
Eddy County (Wildcat)—		
Harvey E. Yates et al, Travis 1, c e½ se se 6-18s-29e	35	2606
Lea County (Hardy)—		
Gulf, Carson 1-C, c ne ne 33-21s-37e	100	3760
Magnolia, Carson 5, c sw ne 33-21s-37e	420	3770
Lea County (Langlie)—		
Anderson-Prichard, Wells-Conoco 6, c sw nw 5-25s-37e	240	3543
Lea County (Mattix)—		
North Shore Corp., Woolworth 4, se nw nw 33-24s-37e	129	3565
Lea County (Penrose)—		
Peters et al, Coll 2, c w½ nw sw 26-22s-37e	65	3645
Lea County (Rhodes)—		
Stanolind, Gregory 1-B, c sw nw 15-26s-37e	¶3.9	3134
Lea County (Vacuum)—		
Drilling & Explo. Co., State-Shell 2-M, sw nw se 29-17s-35e	170	4650
Magnolia, State-Bridges 32, c ne nw 25-17s-34e	222	4620

* Failures; † Junked; ¶ Million cu. ft. gas.

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ing at 500 feet. In the Skelly pool, Skelly Oil Company's B. L. King 2-A, C NW SW 33-22s-37e, is starting up.

Magnolia Petroleum Company's Selby 1, southeast outpost for the Lovington 9-well pool, was drilling hard gray lime at 5018 feet, carrying small volume of water from the upper lime. The company's State 2-R, east offset to the largest oil well, was drilling at 4360 feet, and Amerada Petroleum Corporation's State 2-A-L, west offset to the same producer, was drilling at 3850 feet. Barnsdall Oil Company has made location for Caylor 1, C NW NW 6-17s-37e, offset by two producers.

Devonian Oil Company's Lee Carter 1, C NE NE 25-23s-36e, is a semi-wildcat in probable gas territory, but assigned to the Lynn field for proration purposes. Continental Oil Company et al's Britt 7-B-15, near C W½ SE SW 15-20s-37e, has rigged up to drill on the east flank of the Monument field. New activity in the Mattix field, includes the latter's Jack 2-A-29, NE NE SE 29-24s-37e, and Skelly Oil Company's State 2-M, C NW SW 32-24s-37e.

Arizona becomes an oil producing state

Reports from D. A. Holm, Arizona state consulting geologist, revealed that the state had found its first commercial producer on June 22, when his test of a Maricopa County wildcat showed it capable of producing 260 barrels of oil daily.

The well is Colonel Samuel F. Reaves' Fuqua 1, NW NW NE 34-1n-4w, about 35 miles southwest of Phoenix and at the edge of the Central Mountain Belt. The well, which was drilled to 735 feet with spudder, then converted to light rotary equipment, topped the productive horizon at 1720 feet and was drilled to 20 feet into the sand. The oil was reported as of "fairly high gravity," and commercial possibilities as "very good."

If the well lives up to advance reports it will climax a 32-year search for oil in Arizona. Approximately 70 wildcats have been drilled in the state, and while shows of oil and gas have been common the only salable production to date has been from a railroad water well near Willcox that gave up 3000 gallons of gasoline-kerosene, and light oil, which was sold to the surrounding farmers for 10 cents a gallon. Arizona's possibilities have received little attention from major oil enterprises as the state was condemned by government geologists and other investigators. Since the publication of a monograph "Oil Possibilities of Arizona," by Holm, in January, 1939, interest has been stimulated and major companies have made investments.

While there are seven other wildcats drilling in scattered parts of the state most late activity has centered in Apache and Navajo counties, where majors have been making seismograph surveys and large lease blocks have been formed. Latest developments prior to the oil find have been the spudding of Peoples Gas & Oil Company's Gardner 1, SE 2-1n-3e, in Maricopa County, at the outskirts of Phoenix, and the staking of location for Rincon Drilling Syndicate's State 1, N NW NE 28-13n-27e, in Apache County.

At present most operators are acquiring blocks from patented land owners in return for drilling contracts with time limit of one year, after which rentals go into effect. Royalties on these leases range from 1/12 to 1/8. State lands are leased under a new law whereby the Land Department issues a 5-year prospecting permit on a tract not to exceed 5120 acres in a 10-mile square, and 1 well, on state or adjacent lands, will fill the drilling requirements. The state owns 11,400,000 acres or about 15.6 percent of the state. Leases may be applied for from William Alberts, state land commissioner, at Phoenix.

Pictured here, beside the butane-type engine used in drilling Arizona's first producing well are its owners, Colonel Samuel F. Reaves and Clyde Wilson, visiting the State Land Commissioner William Alberts, as the latter wished them luck at the beginning of drilling operations.

Michigan Fields

Mile southeast extension of Walker pool is indicated

Mt. Pleasant, Mich.—A mile southeast extension of the Kent County-Walker Traverse lime pool was indicated this week when Pyramid Oil Company's Stiles 1, NE NE SE 4-6n-12w, drilled an oil-gas show at 1733 feet, where drilling was suspended to cement 5-inch casing.

This potential extension was the major development in Michigan for the week, although another wildcat test in Kent County completed for a small pumper. It was Freeland & Rogers' Whalen 1, Section 14-6n-12w, Wyoming Township, 2 miles southeast of Pyramid Oil Company's test. After 4 successive acid treatments operators averaged 10 barrels a day on pump the first 4 days.

Of 5 wildcats completed during the week 1 was to the Sylvania lime-sand zone in Southwestern Michigan. It was Turner Petroleum Corporation's Stern 1, Section 35-4s-13w, Van Buren County, east of Decatur, and showed 2 gas pays in Sylvania before filling with black water at 1551 feet.

Three wildcats in the basin drilled dry in objective formations. These were C. W. Teater's Tillman 1, Section 23-15n-5w, Nottawa Township, Isabella County; Gulf Refining Company's Harings 1, Section 36-17n-4w, Clare County, and Freeman Oil Company's Schut 1, Section 4-21n-8w, Missaukee County. All tested the Dundee.

Michigan Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Allegan County—		
Socony Vacuum, Fein 1, sw se nw 2-4n-13w	100	1680
Webber 5, sw ne ne 11-4n-13w	430	1579
Gordon Oil Co., Slingdiger 1, se se nw 11-4n-13w	250	1600
Chapman Oil Co., Weber 3, se sw ne 11-4n-13w	125	1597
Salem, Smit 1, sw sw sw 14-4n-13w	250	1585
J. V. Wicklund, Smith 1, ne ne ne 23-4n-13w	150	1575
Arenac County—		
W. E. Ross, Peavy 1, se ne 9-20n-4e	¶15	1169
Clare County—		
Gulf, Haring 1, c w ne sw 36-17n-4w	*	3815
Alford State 3, nw sw 28-19n-6w	900	3886
Isabella County—		
C. W. Teater, Tillman 1, ne se nw 23-15n-5w	*	3855
Kent County—		
Wolverine, Thomasa 1, se se sw 33-7n-12w	350	1788
Smith & Wagners, Bank 3, nw se ne 5-6n-12w	425	1765
Bank 1, nw sw ne 5-6n-12w	690	1778
Freeland & Rogers, Whalen 1, se ne nw 14-6n-12w	10	1998
Missaukee County—		
Freeman Oil Co., Schut 1, c sw se 4-21n-8w	*	3956
Montcalm County—		
Taggart Bros., Schnick 13, c w½ 7-12n-9w	¶14	1133
Newaygo County—		
C. D. Hoffman, Benjamin 1, sw nw sw 14-11n-14w	*	2230
Van Buren County—		
Little Four, Ryan 1, sw nw sw 22-2s-16w	*	1045
Bloomingdale, Babcock 1, ne nw ne 18-1s-14w	240	1206
Louis Rose, Ruse 1, c se se 3-1s-15w	*	1278
Daily, Teal 3, nw ne nw 12-1s-15w	200	1198
Universal Oil Co., Farrer 1, ne ne nw 13-1s-15w	*	1243
Clapsaddle & Harris, Pepper 3, nw nw nw 24-1s-15w	1000	1184
E. W. Collin, Willis 1, sw sw se 23-1s-13w	*	1364
Turner Pet. Corp., Stern 1, ne ne nw 35-4s-13w	*	1551

* Failures; † Junked; ¶ Million cu. ft. gas.

California Fields

Coles Levee well makes 750 barrels at 10,010 feet

Los Angeles.—Tide Water Associated Oil Company has completed KCL 61, Section 14-31-25, in the Coles Levee area, Kern County, for 750 barrels of 31-gravity oil from 10,010 feet, further indicating the potentialities of the Stevens zone which was picked up at 9912 feet. This field was discovered a year ago by Ohio Oil Company and was extended by Richfield Oil Corporation shortly after discovery.

Drilling below 8300 feet and more than 1000 feet below the top of the Gatchell sand, Superior Oil Company's Pleasant Valley 1, Section 22-20-15, a wildcat between Coalinga and Coalinga Nose, is understood to be progressing nicely, although official information is being withheld.

Robert Lytle has staked location for No. 7-18F, a half-mile south of production at Coalinga Nose, and The Texas Company is preparing to drill Exeter 3, C SE 6-20-16, on the north edge of the Gatchell pool. Exeter 1 is in oil sand below 7900 feet. Bandini Petroleum Company's No. 48, Section 18-19-16, topped the Kreyenhagen at 6319 feet and is believed to be too high to find the Eocene shoreline sand.

H. L. Whiston has staked a location in Section 23-29-27, in the northeast of the Fruitvale field, Kern County, for a test of the Vedder zone, expected between 8000 and 9000 feet. This test is in an area where production has been had around 3000-4000 feet.

California Completions

Company, Well and Location	Init. Prod. Bbls.	Depth
Los Angeles County (Dominguez)—		
Shell, Reyes 98	1350	7850
Los Angeles County (Montebello-West)—		
Hathaway Oil Co., Dore 1	110	7662
Vulcan Oil Co., Nash 1	1000	7648
Los Angeles County (Torrance Extension)—		
Texas Co., Oakley 6	220	5241
Los Angeles County (Wilmington)—		
Bond Petroleum Corp., Mutual (LB) 3	250	3245
Long Beach Oil Dev. Co., "Y" (LB) 3	640	4027
"Y" (LB) 4	432	4000
"Y" (LB) 6	no est.	3975
Petroleum Midway Co., Kupfer (LB) G-1	290	3468
Richfield, Pacific Dock (LB) 29	440	2891
Signal, Signal-L.B.-S.P. (LB) 1	3500	4260
Sunray, Santa Fe A-1	528	5717
Union Pacific, U. P. (LB) 109	896	3936
Kern County (Cole's Levee Area)—		
Tide Water, KCL 61, s e n¼c 14-31-25 (W)	600	10,010
Kern County (Strand Area)—		
Tide Water, Cont-KCL-E-35-7, n e swc 7-30-26 (W)	1306	8364
Kern County (Trico Area)—		
Standard, Tulare Farms 2-1, n e swc 35-24-23 (W)	¶19.6	2444
Kern County (Fruitvale)—		
Pacific Southwest, Dillon 1, nwc 27-29-27	75	4068
Kern County (Wasco Area)—		
Union et al, n e swc 36-27-24 (W)	*	12,985
Kings County (Kettleman North Dome)—		
Standard, 41-21Q, s e nwc 21-22-18	2587	8180
Ventura County (Ventura Area)—		
Ventura Explo. Co., Sexton 1, ne swc 30-3-22 (W)	*	9511
Santa Barbara County (Santa Maria Valley)—		
Union, Frank Vicente 5, 21-10-34	1285	5279

* Failures; † Junked; ¶ Million cu. ft. gas.

Long Beach drilling now a court issue

A legal fight to prevent enforcement of ordinances in the City of Long Beach, California, that restrict the drilling for oil, commenced last week with the filing of a petition for an injunction. The complaint, the Continental Corporation and the Los Angeles County Flood Control District, attacks the validity of 28 ordinances adopted since March 9, 1927, on the grounds that they are unreasonable, arbitrary, discriminatory, invalid and not within the power of the defendants, the city and its council.

Superior Court Judge Emmet Wilson has set a hearing for June 26.

The entire city may be thrown open for town lot drilling if the complaint is successful.

In March, 1938, Long Beach refused at the polls to grant permission for the Flood Control District to drill the west bank of the Los Angeles River in Long Beach. As a result, the issue is now being taken into the court in an effort to obtain oil which the flood control supervisors say belong to the taxpayers of the district.

West Texas gas/oil ratio test requirements cut

Texas Railroad Commission has revised the order requiring quarterly gas/oil ratio tests on West Texas oil wells; hereafter the tests need be taken only twice a year.

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WILDCAT REPORT
New Starts and Completions

STATE	WILDCATS STARTED		WILDCAT TESTS COMPLETED							
			Total		Oil		Gas		Dry	
	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year	This Week	This Year
Alabama	...	3	...	1	...	...	...	...	...	1
Arkansas	1	18	3	14	...	1	...	...	3	13
California	5	121	5	62	2	18	1	1	2	43
Colorado	...	1	...	4	...	...	...	...	...	4
Florida	1	1	...	1	...	...	...	...	...	1
Georgia	...	3	...	1	...	...	...	...	...	1
Illinois	19	274	13	186	1	17	...	...	12	169
Indiana	4	18	...	16	...	5	...	1	...	10
Kansas	6	119	3	103	...	36	...	3	3	64
Kentucky	...	10	2	13	1	7	...	...	1	6
Louisiana	1	65	6	50	...	8	...	...	6	42
North Louisiana	...	23	3	16	...	3	...	...	3	13
South Louisiana	1	42	3	34	...	5	...	...	3	29
Michigan	5	98	5	147	1	11	...	...	4	136
Mississippi	...	5	2	3	...	...	...	...	2	3
Missouri	3	21	...	2	...	...	...	...	...	2
Montana	...	1	...	1	...	...	...	...	...	1
New Mexico	1	20	1	8	1	1	...	1	...	6
New York	...	...	...	2	...	1	...	1	...	...
Oklahoma	4	90	7	90	1	11	...	5	6	74
Ohio	...	3	...	7	...	1	...	...	...	6
Pennsylvania	...	2	...	2	...	...	...	...	...	2
South Dakota	...	1	...	...	...	...	...	...	...	...
Texas	25	530	21	535	1	54	...	6	20	475
East Texas	4	62	1	49	...	3	...	1	1	45
North Texas	1	75	4	111	...	19	...	1	4	91
Gulf Coast	2	58	4	46	...	3	...	...	4	43
Panhandle	...	5	...	5	...	...	...	...	...	5
South Texas	15	211	11	232	1	19	...	3	10	210
West Texas	3	109	1	92	...	10	...	1	1	81
West Virginia	...	2	...	...	...	...	...	...	...	...
Wyoming	...	1	...	1	...	...	...	...	...	1
Total United States	75	1397	68	1249	8	171	1	18	59	1060

ARKANSAS

FIRST REPORTS

Columbia County — Twin Cities' Syndicate (Buckbee et al), H. J. Hollingsworth 1, c nw sw 31-17s-18w, moving in materials.

COMPLETIONS

Calhoun County—J. R. Lockhart's (C. E. Murdock et al), Southern Kraft 1, se nw nw 17-14s-13w, elev 171 ft, top Graves sand 2751 ft, top Tokio 2921 ft, top Permian lime 4900 ft, dry abnd 5095 ft.

Miller County—J. K. Wadley & C. E. Johnson, M. A. Jacobs Estate 1, nwc ne se 33-18-26, elev 216 ft, top Nacatoch 1854 ft, top Saratoga chalk 2264 ft, abnd 4003 ft.

Sebastian County—Ozark Nat. Gas Co., Giarrara 1, 21-7n-30w, abnd 5316 ft.

CALIFORNIA

FIRST REPORTS

Kern County—General Petroleum Corp.'s Sullivan 1, 330 ft s 330 ft w e¼c 12-29-25, Greeley-Northwest area, dr. Standard's Tulare Farms 2-4, 1984 ft s 1986 ft w nec 34-24-23, Trico area, lcn. Standard's Tulare Farms 2-3, 656 ft n 1982 ft w sec 35-24-23, Trico area, lcn.

Fresno County—Standard's 73-19B, 1650 ft s 990 ft w nec 19-19-16, Coalinga area, Eocene tests, ru.

Santa Barbara County—Richfield's San Marcos 2, 2460 ft n 4800 ft e swc of Rancho Tequepis, San Marcos area, lcn.

COMPLETIONS

Kern County—Tide Water's KCL 61, 330 ft s 990 ft e n¼c 14-31-25, Cole's Levee area, comp 600 bbls daily 31.5 grav cutting 1.0 percent with 700 MCF, top oil sand 9932 ft, td 10,010 ft. Tide Water's Cont-KCL-E-35-7, 2310 ft n 1650 ft e swc 7-30-26, Strand area, potential 1306 bbls daily, 34.0 grav, cutting 3.3 percent with 979 MCF. P.P. 120 bbls daily, 34.0 grav cutting 1.0 percent with 40 MCF, td 8364 ft, Standard's Tulare Farms 2-1, 660 ft n 660 ft e swc 35-24-23, Trico area, comp 19,600 MCF gas, td 2444 ft. Union's joint test, 1320 ft n 660 ft e swc 36-27-24, Wasco area, abnd 12,985 ft; test at 12,749 and 12,774 ft recovered salt water with trace of oil, swabbed 119 bbls net in 37 hrs, 27 grav (wet) 54 percent, top Olcese 10,913 ft, top barren Vedder 12,543 ft, top zone gray oil-stained sand 12,793 ft.

Ventura County—Ventura Exploration Co.'s Sexton 1, 250 ft n 1500 ft e swc 30-3-22, Ventura area, abnd 9511 ft.

FLORIDA

FIRST REPORTS

Baker County—Swift Creek Oil Company's Howell Turpentine Co. 1, near c 15-4s-19e, rigging up.

ILLINOIS

FIRST REPORTS

Clay County—Hawley Oil Co.'s Chandler 1, sw sw se 12-3n-6e, Harter tnp, rig.

Gallatin County—J. G. Buell's Egyptian Lumber Co. 1, c n nw se 16-8s-10e, New Haven tnp, dr. McCarter's Logan 1, c e sw ne 20-9s-9e, Gold Hill tnp, dr. R. F. Jackson's McGhee 1, sw ne ne 29-9s-9e, Gold Hill tnp, rig.

Jefferson County—Shell Oil Co.'s Jefferson Oil & Gas Co. 1 (Isom 1), ne ne sw 32-3s-2e, McClellan tnp, moving in materials.

Lawrence County—Ullom & Purnall's A. B. Jordan 1, ne nw nw 8-2n-11w, Dennison tnp, dr. Cecil Keneipp et al's E. J. Ridgley 1, se nw sw 1-2n-12w, Dennison tnp, dr.

Madison County—Dr. R. E. Little's Fremont Layett 1, ne ne ne 27-3n-7w, Jarvis tnp, dr. Lambert et al's Brookmyer 1, sw nw ne 8-3n-8w, Collinsville tnp, dr. Dr. E. L. Loper's F. Keller 1, sw sw nw 8-3n-8w, Collinsville tnp, rig.

Marion County—J. Lickey's Quick 1, sw nw se 35-3n-1e, Carrigan tnp, dr. Miller et al's K. M. Beal 1, sw se nw 34-3n-2e, Tonti tnp, dr.

Pike County—Floyd A. Sargeant's A. Newton 1, n ne ne 4-3s-4w, Fairmount tnp, dr.

Randolph County—Ben Banner's Evers 1, se ne ne 5-6s-5w, Steeleville tnp, dr.

Wabash County—Hughes et al's Tauquary 1, sw sw ne 30-1s-13w, Mt. Carmel tnp, rig. T. C. Knight et al's P. J. Hoffman 1, sw nw ne 29-2s-13w, Keonsburg tnp, loc. William N. Bartlett's W. Gray 1, nw nw se 30-2s-13w, Compton tnp, loc.

Washington County—Brown & King's Stawicki 1, se sw se 17-3s-2w, Bolo tnp, dr. Conrey & Griffin's Joint Stock Land Bank 1, se nw ne 7-2s-4w, Plum Hill tnp, moving in materials.

Wayne County—A. P. Muhlbach's Garrison 1, c e sw sw 35-1n-8e, Elm River tnp, rig.

COMPLETIONS

Clay County—Stewart Oil Co.'s J. Fields 1, sw ne sw 17-5n-5e, Larkinsburg tnp, top Ste. Genevieve 2425 ft, abnd 2565 ft.

Effingham County—Kingwood Oil Co.'s McWhorter 1, c e se nw 15-6n-6e, Union tnp, drilled to 7000 ft and plugged back to 3028 ft, pumped 15 bbls oil and 50 bbls water in 24 hr test.

Fayette County—Garnier et al's C. T. Wade 1, ne nw se 31-5n-4e, Aclede tnp, top Ste. Genevieve 2273 ft, abnd 2418 ft. C. E. Lange et al's J. C. Bloom 1, se se ne 19-6n-1e, Vandalia tnp, top Ste. Genevieve 1685 ft, abnd 1794 ft.

Marion County—Menhall et al's Hazlewood 1, ne ne sw 8-2n-1e, Sandoval tnp, abnd 1806 ft in Ste. Genevieve. W. B. Dallas & D. Shendel's Toulme 1, se se se 25-2n-1e, Odin tnp, top Ste. Genevieve 2050 ft, abn 2123 ft.

Washington County—Beavers et al's Sancey 1, c ne ne nw 16-3s-3w, Pilot Knob tnp, top Renault 1365 ft, abnd 1380 ft. J. J. Broadus' Howard Chapman 1, nw nw se 35-3s-3w, top Bethel 1261 ft, abnd 1310 ft. Phillips Petroleum Co.'s Hunleth 1, c ne nw ne 32-3s-4w, Oakdale tnp, top Devonian 2384 ft, abnd 2567 ft. Gulf Refining Co.'s G. W. Baldwin 1, se se nw 4-1n-1w, 2½ miles northwest of Irvington, top McClosky 1698 ft, oil stain in first break between 1705 and 1712 ft, abnd 1866 ft.

Wayne County—Sloan Oil Trust, Ben Crews 1, nw ne se 6-2s-9e, Leech tnp, abnd loc. Irvin Allen's Horton 1, se se se 12-3s-9e, Leech tnp, abnd loc. Schlafley & Damron's Haefle 1, c ne ne ne 17-3s-9e, Leech tnp, abnd loc.

INDIANA

FIRST REPORTS

Posey County—Gulf Refining Co.'s J. Pfeiffer 1, c n½ nw nw 13-6s-13w, Black tnp, moving in materials.

Spencer County—Sunshine Oil & Gas Co.'s L. D. Trent 1, ne sw 11-5s-6w, Jackson tnp, loc.

Warrick County—E. L. Newton's (Hoosier Drilling Co.'s) Ida Baum 1, sw se nw 9-6s-7w, Boon tnp, moving in materials. J. Ervin Taylor & L. L. Lemoine's D. Haynes 1, se c ne 11-6s-7w, rig.

KANSAS

FIRST REPORTS

Rice County—Hollow et al's Guldner 1, sec 5-18s-9w, dr. Lauck et al's Schoonover 1, swc se 20-18s-9w, dr. Bradley's Ruhl 1, c e½ ne nw 24-19s-10w, dr. Phoenix Drilling Co.'s Linville 1, swc se 4-20s-10w, rur. Shaffer's Bauer 1, c w½ sw sw 23-21s-7w, pits.

Stafford County—Virginia Drilling Co.'s Teipermann 1, nec sw 29-21s-12w, pits.

Woodson County—Welch et al's Tipton 1, se nw sw 32-25s-14e, sd.

COMPLETIONS

Ottawa County—Babcock's Copeman 1, cnl s½ s½ se 7-10s-2w, 4 mi s Lamar, top Arbuckle 3744 ft, top Granite Wash 4008 ft, abnd 4135 ft.

Rice County—Continental Oil Co.'s Hamilton "B" 1, swc ne 19-18s-7w, top Viola 3260 ft, top Arbuckle 3286 ft, td 4180 ft, completed for water disposal well. Phillips Petroleum Co.'s Hemmer 1, nwc se 16-18s-10w, 2½ s Stumps pool, top Topeka 2520 ft, top Lansing 2933 ft, top Conglomerate 3227 ft, top Arbuckle 3275 ft, abnd 3283 ft.

KENTUCKY

COMPLETIONS

Daviess County—J. C. Ellis & Petroleum Co.'s Hansford 6, top McClosky 1771 ft, flowed 6 bbls in 15 min to open McClosky producing horizon, td 1773 ft. Snowden & McSweeney's A. Reid 1, 3 miles east of Owensboro, McClosky dry, abnd 1535 ft.

SOUTH LOUISIANA

FIRST REPORTS

Livingston Parish—Fowler & Tower's Ellis Hood 1, Denham Springs area, 990 ft w and 660 ft n of sec of sec 37-7s-3e, lcn.

COMPLETIONS

Acadia Parish—T. T. Tolson et al's Turner 1, 300 ft s and 300 ft e of swc nw¼ nw¼ sec 25-7s-1e, abnd 8705 ft.

Cameron Parish — Union Sulphur's Sweet Lake Land & Oil Co. 1, 330 ft s and 330 ft e of nwc sec 9-12s-7w, abnd 9782 ft.

Plaquemines Parish—Texas Co.'s State Bastian Bay 1, Bastian Bay prospect, 3442 ft n and 1059 ft e of swc sec 43-20s-28e, abnd 12,257 ft.

NORTH LOUISIANA

COMPLETIONS

Caddo Parish—J. T. Driscoll et al's Woolworth 1, ne se 19-18n-14w, elev 196 ft, massive anhydrite 4390-4655 ft, top Jeter sand 4870 ft, top Pettet (basal Glen Rose) lime 5602 ft, salt water, abnd 5608 ft.

Natchitoches Parish—Jack Lent et al's Whatley 1, sw se sw 17-10n-10w, top hd chalk 1561 ft, base Ozan top Buckrange 2069 ft, top Blossom 2260 ft, Austin chalk 2790-3073

ft, base Eagle Ford shale and top Washita 3132 ft, show oil and gas 1030-50 ft, tested 100 ft mud and oil (40 percent oil) no water, 3262-96 ft, later tested oil and salt water, pb 3282 ft, retested, pumped 10 bbls oil and 10 bbls sw daily, re-shot swabbed dry, abnd 3296 ft.

Sabine Parish—Reeves & Stoma's Ezernack 1, c e½ ne nw 8-7n-13w, elev 249 ft, top chalk 2035 ft, showed oil, abnd 2061 ft.

MICHIGAN

FIRST REPORTS

Barry County—R. L. Stoddard's Dotzert 1, 3-4n-10w, rig.

Branch County—Ralph LaBlanc's Sobeski 1, se sw se 31-5s-5w, lcn.

Kent County—Fortney Oil Co.'s Land Association 1, sw sw se 23-6n-12w, rig.

Ottawa County—Brailey Oil Synd.'s Weurding 1, nw se se 33-5n-13w, rig.

Van Buren County—James S. Brailey's Jennings 1, ne nw 11-2s-13w, dr.

COMPLETIONS

Isabella County—C. W. Teater's Tillman 1, ne se nw 23-15n-5w, Dundee 3822 ft, abnd 3855 ft.

Kent County—Freeland & Rogers' Whalen 1, se ne nw 14-6n-12w, Traverse 1866 ft, pay 70-1979 ft, td 1998 ft, after acid 10 bbls pump.

Missaukee County—Freeman Oil Co.'s Schut 1, c sw se 4-21n-8w, Dundee 3950 ft, water 55 ft, abnd 3956 ft.

Newaygo County—C. D. Hoffman's Benjamin 1, sw nw sw 14-11n-14w, abnd 2230 ft.

Van Buren County—Turner Pet. Co.'s Stern ne ne nw 35-4s-13w, abnd 1551 ft.

MISSISSIPPI

COMPLETIONS

Hinds County—Cleve Love et al's S. F. Johnson 1, ne se 29-6n-1w, plugged back to 3355 ft, perf csg, tested salt water, abnd 6484 ft.

Lowndes County — Ryan & Anderson's Swoope 1, ne ne 3-19s-18w, elev 185 ft, top Paleozoics 1116 ft, abnd 4010 ft.

MISSOURI

FIRST REPORTS

Buchanan County—Miller et al's Carrough 1, c se se 24-57n-35w, lcn.

Platte County—Kelly's Fee 1, ne sw ne 26-51n-34w, otd 294 ft, top Hertha 319 ft, dr 680 ft, Missouri Valley Gas & Oil Co.'s Young 1, c sw se 30-51n-34w, dr.

NEW MEXICO

FIRST REPORTS

Harding County—Waddell & Casthwait et al's Peters 1, c se ne 31-15n-31e, rur.

COMPLETION

Eddy County—Harvey E. Yates et al's Travis 1, c e½ se se 6-18s-29e, elev 3586 ft, broken pay 2492-2606 ft, shot 450 quarts nitro, flowed 35 bbls. initial.

OKLAHOMA

FIRST REPORTS

Kay County—Blosser et al's Rudolph 1, nec sw 27-29n-1w, s of N. Braman pool, otd 3653 ft, td 3653 ft, fsg.

Kiowa County—Bollen et al's Holcomb 1, nec sw 25-7n-19w, lcn. Beckett's Standerfer 1, nec 25-7n-18w, machine.

Payne County—Ellison et al's Stiles 1, ne sw nw 27-18n-4e, lcn.

COMPLETIONS

Garvin County—Giblett's Rich 1, sec sw 2-1n-1e, 3 mi s Wynnewood, abnd 728 ft.

Kingfisher County—Ellison et al's Baker 1, nec se 20-19n-5w, 7 mi e Hennessey, top second Wilcox 7298 ft, abnd 7323 ft.

Lincoln County—Fain Drilling Co.'s Wertman 1, swc 12-15n-4e, ne Chandler pool, top Sylvan 4500 ft, top Viola 4576 ft, top Dense 4610 ft, top Dolomite 4630 ft, top first Wilcox 4636 ft, top second Wilcox 4680 ft, abnd 4701 ft. Villines et al's Marshall 1, nw ne ne 28-15n-4e, ne Chandler pool, top Hunton 4830 ft, top Sylvan 4890 ft, top Viola 4960 ft, top Dense 4990 ft, top Dolomite 5015 ft, top first Wilcox 5020 ft, top second Wilcox 5065 ft, abnd 5080 ft. Cooper Drilling Co.'s Johnson 1, nec nw 32-15n-5e, n Chandler pool, top Prue 3535 ft, pb 3566 ft, abnd 3569 ft.

Pottawatomie County—Cooper's Strawn 1, sec sw 32-8n-5e, s Maud pool, top Woodford 4030 ft, top Sylvan 4225 ft, top Viola 4310 ft, top Senora 3590 ft, top Hunton 4213 ft, top Dense 4360 ft, top Dolomite 4390 ft, abnd 4411 ft.

Seminole County—Atlantic Refining Co.'s Jimmey 1, se nw ne 21-7n-6e, w Little River pool, td 4417 ft, Wilcox production, swabbed 516 bbls 16 hrs. Flynn et al's Work 1, ne se se 19-8n-7e, s of E. Bowlegs pool, top Booch 3258 ft, top Hunton 4077 ft, top Viola 4158 ft, top Dense 4204 ft, top Dolomite 4240 ft, top Wilcox 4270½ ft, abnd 4286 ft.

EAST TEXAS

FIRST REPORTS

Anderson County—J. C. Cook Drl. Co.'s Ezzell & Copeland (Southern Pine Lumber Co.) 1, 1319 ft fr e and 3302 ft fr s lines of 1615.2-acre tract, N. Hanson sur, Jarvis area, rig.

Fannin County—H. W. English et al's T. W. Ayers 1, 500 ft fr e and 160 ft fr s lines of w½ of J. D. Seales sur, 1 mi nw Trenton, sd 160 ft.

Rusk County—Goldenrod Drl. Co. et al's Hall Wood 1, 2400 ft fr s and 5950 ft fr e lines of J. I. Sanches sur, blk 10, 1½ mi nw New Salem, 3250 ft east of Cherokee County line, dr 2315 ft.

Titus County—Superior Oil Co. (Tulsa's) John Hargrove 1, 900 ft s and 300 ft e of nwc of south 200 acres, or 2800 ft fr s and 3275 ft fr w lines of S. B. Patton sur, 8 mi s Mount Pleasant, mim.

COMPLETIONS

Kaufman County—Griffith & Griffith's Belle Murray 1, 4111 ft fr ne and 1195 ft fr nw lines of W. Fulcher sur, 3 mi n Elmo, elev 538 ft, Austin chalk 2180-2784 ft, top Sub-Clarksville 2825 ft, top Woodbine series 3303 ft, abnd in water sand 3324-3512 ft.

NORTH TEXAS

FIRST REPORTS

Hardeman County—Amerada Pet. Corp.'s W. M. Rice 1, 1635 ft fr w and 1679 ft fr n lines of W&NW sec 81, blk H, 6 mi se Quanah, rur for 7800-ft test.

COMPLETIONS

Clay County—L. T. Burns & Consolidated Oil Co.'s G. W. Scaling 1, 330 ft out of sec HT&B Ry. sec 6, A-879, 5 mi s Halsell, broken Strawn saturation 4439-4464 ft, td 4545 ft, shot 60 qts, abnd 4448-64 ft.

Montague County—Bridwell Oil Co. et al's H. A. Reynolds 1, 466 ft out of swc of E. T. Ry. sec 9, Canyon lime 1748-62 ft, top Twin lime 1995 ft, top Hooser lime 2570 ft, top Strawn lime 5088 ft, top white lime 5305 ft, top Ellenberger 5374 ft, abnd 5403 ft.

Throckmorton County — Rogers-Rogers & Steed's R. P. Lee 1, 1320 ft fr n and 2310 ft fr w lines of BBB&C Ry. sec 197, abnd 638 ft.

Wichita County — R. A. Westbrook Oil Corp.'s L. F. Ramming 2, 2341 ft fr s and 1404 ft fr w lines of blk 2, H. Hastie sur A-92, oil sand 1250-70 ft, yielded salt water with show oil, abnd 1372 ft.

TEXAS GULF COAST

FIRST REPORTS

Jasper County—C. B. Bunte's Cartwright 1, Magnolia Springs area, 406 ft from s and e lines of lot 16, Franklin subdivision, E. O. LeGrande sur, mim.

Polk County—J. W. Frazier's Bergman 1, Goodrich area, 900 ft fr se line and 1320 ft fr sw line of 1622-acre tract, A. Viesca sur, lcn.

COMPLETIONS

Colorado County—E. H. Barnes' Tait 1, n of Altair, 3200 ft se from nwc and 150 ft e at right angles to Hi-way in BBB&C No. 116, abnd 3138 ft.

Harris County — J. Deering's Ridgeview Farms 1, Cypress area, 3810 ft fr s line of Durknorth survey and 1639 ft w of e line of Moody sur, abnd 6523 ft.

Matagorda County—Sun Oil Co.'s Cavallin 1, sw of Palacios, 660 ft out of sec of 160-ac tract, blk 13, J. Duncan sur, abnd 9582 ft.

Wharton County—Moore & Ahern-Cron & Gracey's Mauritz Bros. 1, Danevang area, 466 ft fr s and w line of 160-ac tract, Beaty, Seale & Forwood, No. 5, abnd 5607 ft.

SOUTH TEXAS

FIRST REPORTS

Bexar County — Long Brothers' Drilling Co.'s Applewhite 1, 200 ft s line, 200 ft e line, blk 7, county blk 4180, Fernando Rodriquez sur, rigging up.

Colorado County — Williams and Barnes' Tait 1, 2 miles northwest Altair, 7 mi sw Eagle Lake, lcn.

Frio County—H. F. Wilcox Oil & Gas Co.'s Harris 1, 330 ft ne line, 330 ft se line, section 3, Hooper and Wade sur, dr.

Hidalgo County—Pharr San Juan Oil Co.'s Kelley 1, 425 ft n line, 330 ft w line of blk 244, Kelley-Pharr subd, por 69, lcn.

Jackson County—John G. Mayo and C. M. Frost et al's Tucker 1, 2575 ft sw line, 466 ft se line, Raymond Musquez gr, spudded. Moore and Ahern et al's Drushel 1, 285 ft ne at rt ang fr Navidad River, 330 ft n and 330 ft w of se cor of 40-ac lse, Patrick Scott sur, Ab-69, lcn.

Jim Wells County—H. H. Howell's Lindsay and Reed 1-A, 330 ft w line, 467 ft s line of lot 21, W. L. Whitman subd of Los Altos gr, Teresa Bostillos sur, lcn.

Karnes County—Paul L. Meadows' Ruehman 1, 330 ft s, 990 ft w of ne cor of blk 26, subd of Medio Ranch, James Richardson sur, set sur csg and shut down.

McMullen County — Gordon Griffith's Dilworth 1, scales: 660 ft w line, 750 ft n line Moore sub, lcn.

Nueces County—Mills Bennett Production Co.'s Poenisch 1, on common line of lot 1 and 16, and 467 ft nw line of blk 14, Flour Bluff farm and Garden tr, subd Enrique Villareal gr, moving in rig. SEW Oil Corp.'s Dallas Joint Stock Land 1, 660 ft ne line, 660 ft nw line, sec 148, Bishop subd of Weil ranch, Palo Alto gr, moving in materials. Shield Oil Co.'s Potter 1, 474 ft n line, 697 ft w line of blk 10, George H. Paul's subd of Driscoll Ranch, Joaquin Lopez de Herrera gr, Ab-606, rigging up. Texas Conservative Oil Co.'s Wright 1, 330 ft n line, 330 ft e line of nw section 46, George H. Paul's subd, Driscoll Ranch, in Joaquin Lopez de Herrera gr, spudding.

Starr County—Clopton & Mitchell's Tijerina 1, 350 ft most s'ly n line, 1000 ft most e'ly e line of 640-ac lse, share 14-C, por 80, lcn.

Webb County—H. K. Boysen and Brian Jones' Watkins 2, 330 ft n line, 2970 ft e line of section 20, San Casimiro grant, lcn.

COMPLETIONS

Bee County—Dirks Brothers' Page 1, 2400 ft nw line, 1701 ft sw line, Thomas K. Pilkington sur, abnd 4120 ft.

Duval County—Parr Drilling Co.'s Villareal 1, 330 ft n line, 330 ft w line of blk 2, San Andres gr in 1427.63-ac tr, abnd 6015 ft. W. Earl Rowe and R. F. Scheig's Weil 1, 2310 ft se line, 2310 ft sw line of BS&F sur 567, abnd 2752 ft.

McMullen County—George Collum's Schroeder 1, 330 ft n line, 330 ft w line of 150-ac lse, Hely sur, abnd 1608 ft. Gilcrease Oil Co.'s Shiner 1, 330 ft s line, 330 ft e line of nw¼ sec 74, C. C. Schumway subd of Shiner Ranch, abnd 2317 ft. R. P. Ricker's La Chusa Land 1, 330 ft n line, 330 ft w line of se¼ of nw¼ sec 52, Hugo Nadler sur, abnd 2218 ft.

Milam County—H. R. Edwards' Camp 2, 200 ft e line, 825 ft s line 48.5-ac tr, D. Robinson sur, abnd 1910 ft.

San Patricio County—Arnold O. Morgan's Benson 1, 150 ft at rt ang fr ne line (state highway 16), 350 ft fr s line of blk 12 W. R. Hazen subd of John Pollan sur, abnd 5489 ft. Seaboard Oil Corp.'s Persons 1, 660 ft w'ly w line, 660 ft n'ly s line of 195-ac tr, blk 29, George H. Paul's subd, Welder Ranch, sand and shale no show, 3220-3412 ft, sand, 5636-60 ft; last gauge 33 barrels per day through ¼-inch choke, 400 pounds tubing, 600 pounds casing, td 6348 ft.

Starr County—Stevens and Clopton's Green and Manning 1, 150 ft s line, 150 ft w line of lot 3, share 85, por 81, abnd 1702 ft.

Wilson County—E. W. Schneider's Hierholzer 1, 700 ft n line, 1200 ft w line of blk 5, Rafael Salinas sur, abnd 1208 ft.

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NOTES FOR THE Equipment Buyer and User

Swab

KIBELE MANUFACTURING COMPANY

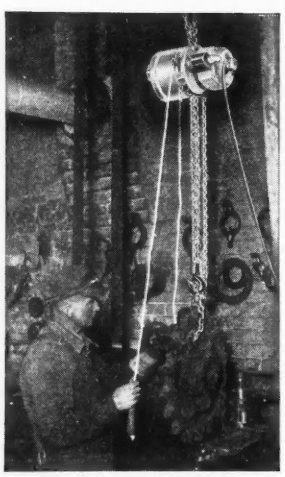
Kibele Manufacturing Company of Dallas, Texas, announces a new type of 2-inch swab that is given the name of Illinois Special. It is designed for areas where swift descent of the swab through the fluid is desired and the height of the fluid is not excessive.

The swab features a bore through its mandrel that is larger than the regular 2-inch type.

Electric Hoist

COFFING HOIST COMPANY

"Quik-Lift" is the name given a new electric hoist recently announced by Coffing Hoist Company, Danville, Illinois. It is claimed by the manufacturer



Coffing "Quik-Lift"

that for dependable and economical service the new hoist incorporates a maximum amount of efficiency with speed, power and durability, and is the result of three years of intensive research and development work by a competent staff of engineers.

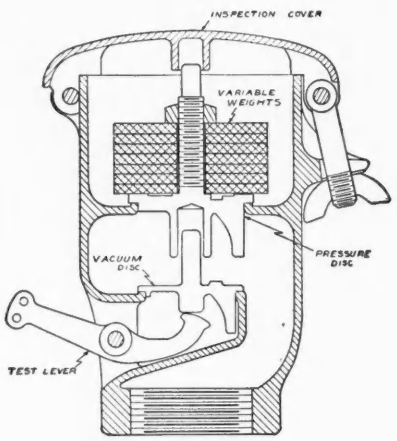
This new hoist can be plugged into any circuit or current connection, either AC or DC, and uses only a few cents worth of current a day. It has a heavy-duty ball-bearing motor, fully enclosed, high starting torque, single and three-phase. The hoist is built with lubri-seal ball bearings; gears and pinions made of special heat treated alloy steel, sealed and running in oil; hooks are drop forged and heat treated alloy steel, designed to stand 200 percent overload; extra heavy load chain that will not kink or bend, with actual strength several times over rated capacity; fool-proof limit switches; shoe-type brake with large braking surface assures smooth and positive operation; sensitive yet sturdily constructed controller with heavy-duty contact points, and many other outstanding features.

The "Quik-Lift" may be had with either load hook or trolley suspension, in capacities from 250 to 4000 pounds, and weighs only 89 to 195 pounds.

Vapor Control Systems

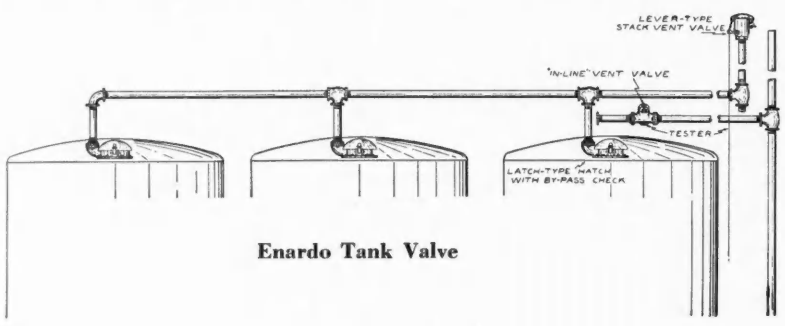
ENARDO FOUNDRY AND MANUFACTURING COMPANY

A complete vapor control system for use on crude oil or refined products storage tanks has been designed by Enardo Foundry & Manufacturing Company, 2729 Sand Springs Road, Tulsa, Oklahoma. The system, which will operate on any number of tanks in a battery, consists of by-pass hatch



Enardo Stack Valve

valves, testers, "in-line" vent valves, and stack vent valves. The system will maintain oil in either dead or active storage within the highest possible gravity bracket; a control that keeps volume losses at a minimum.



Enardo Tank Valve

Shale Separator

THOMPSON TOOL COMPANY

An innovation in mud conditioning systems is the new shale separator and sampling machine developed by Thompson Tool Company, Iowa Park, Texas. The shale separator consists of a long steel drum containing finned baffles which rotates upon ball bearings within a Monel metal screen. All necessary power is provided by a large paddle operated by flow of mud from well. All bearings are fully protected from mud and water, and makers claim welding, bracing, and skid mounting eliminate practically all vibration. Available with the separator is a sampling machine into which a portion of the stream is diverted from chamber to chamber to allow cuttings to settle. Two sizes of separator are available; one 13 feet in length, the other 14 feet 6 inches in length with a greater capacity.

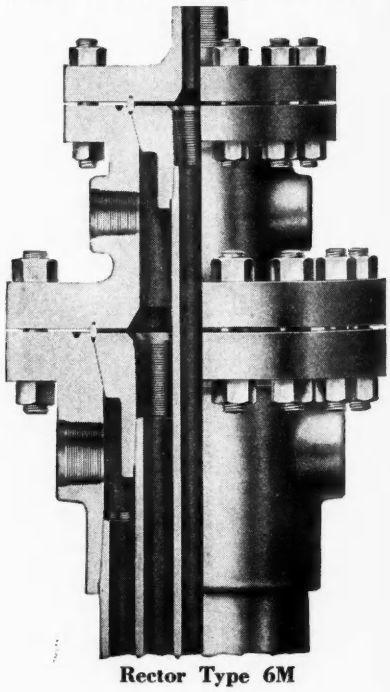
Casing and Tubing Head

RECTOR WELL EQUIPMENT COMPANY

Rector Well Equipment Company, Fort Worth, Texas, announces casing and tubing head, designated as the Type 6M, of the mandrel type of suspension, and flanged above the suspension and packing medium.

Type 6M is compact, rugged, and easily installed. The Rector patented sealing ring accomplishes the sealing of pressures and also provides a hold-down on the mandrel. The mandrel is furnished either threaded, or welded directly to casing.

The tubing head is double flanged, when applied to top of flanged casing head. This same tubing head may also



Rector Type 6M

MAKING THE BEST OF IT

So long as the rubbing of sucker rod couplings can't be avoided, the next best thing is to be sure that they are made of a steel that has high power to resist abrasion.

Nickel-Molybdenum (SAE 4615), when carburized has exactly that quality – the high case hardness that means extra wear resistance. In addition it stands up exceptionally well against corrosion fatigue – an important quality in sour wells. The core properties – strength and toughness – assure adequate thread strength. SAE 4615, when properly heat treated, can be accurately machined without difficulty.

In the exacting business of oil production, Molybdenum steels are meeting many such demands for special qualities to meet special requirements. Practical data about these steels and their applications have been assembled in our new book, "Molybdenum Steels in Oil Production," which will be sent free on request.

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MOLY

NOTES FOR THE Equipment Buyer and User

be furnished with female threaded bottom connection when it is to be installed on a casing head having threaded upper connections.

Mandrels of the Type 6M head are designed to pass through blowout preventers that may be installed on the well, prior to the setting of casing or tubing. This keeps the well under full control during the operation.

The head is of cast steel, and is furnished in 4000-pound test, with A.P.I. 600 Series flanges, and in 6000-pound test, with A.P.I. 900 Series flanges.

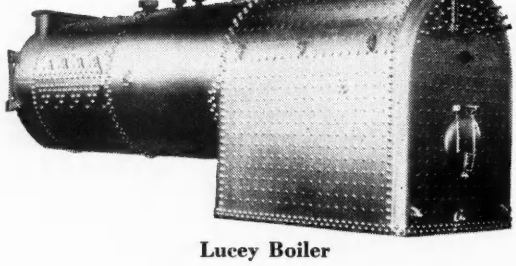
Boiler

LUCEY BOILER & MANUFACTURING CORPORATION

Lucey Boiler & Manufacturing Corporation, Chattanooga, Tennessee, announces a boiler of 150 horsepower, 350 pounds working pressure, A.S.M.E. Code, with a rivetless fire box 60 x 72 x 96 inches; a fire box heating surface of 178 square feet, and volume of 233 cubic feet Through the use of high tensile strength steel, the weight of the mammoth steam plant has been held down to only 36,500 pounds. It is furnished either with or without dome.

The boiler includes seamless fire box, 20 inches between crown sheet and outside wrapper, plenty of steam space with two gauges of water; arched crown sheet, large corner radii; short tubes (13 feet) in vertical rows. Effective heating surface. 4-inch water space all around the fire box; good water circulation.

This new "Hi-Tensile" Oil Country Boiler will also be made in 250 and 300 horsepower.

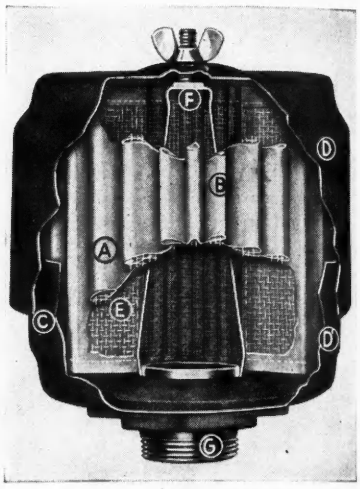


Lucey Boiler

Air Filter

STAYNEW FILTER CORPORATION

Staynew Filter Corporation, Rochester, New York, announces a newly designed dry-type air filter embodying the Protectomotor principles which is for small internal combustion engines, compressors, pumps and all "air-breathing" machines. This Protectomotor Model E is protected against weather conditions by a heavily enameled steel housing which opens at the bottom. The company's patented "radial-fin" construction is used to provide large filtering area in small space to secure free air flow for long periods of oper-



Staynew Filter—Model E

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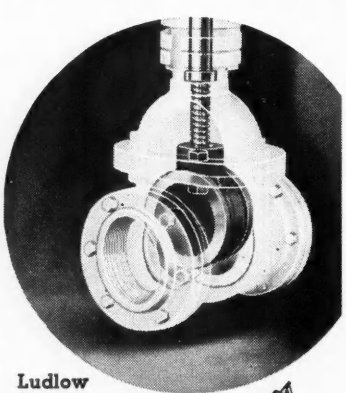
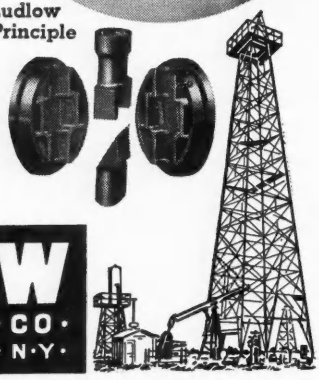


Ludlow Principle



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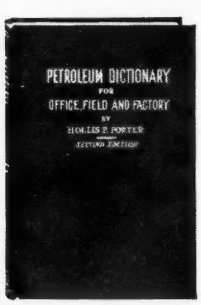

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Pumping Jack

THE NATIONAL SUPPLY COMPANY

The National Supply Company has recently added a new pumping jack to its Type D line. This is known as the Type D-65 and is of the under-pull pattern with a rated dynamic polish rod load of 6500 pounds. Rated stroke is 36 inches, although longer strokes may be taken with proper attention to expansion and contraction in rod lines.

The entire jack is fabricated from structural steel by electric welding for greater strength and rigidity. The frame is made in two halves for ease in handling and the beam is assembled in one solid unit with provisions for bolting on the various bearing parts. This construction simplifies the assembly and alignment of the jack on the foundation.

The jack beam is adjustably mounted on the frame permitting a longitudinal and angular movement that enables the operator to align the hanger accurately over the center of the well and compensates for slight errors in erection. The link type polished hanger closely approximates straight lift and is easy to lubricate. A feature of the linkage design is that any wear that will eventually take place will not affect the accuracy of the motion. All bearings are enclosed. The pull bar and saddle bearings are of the oil bath type equipped with oil seals.

Light Plant

LE ROI COMPANY

A new completely weatherproof light plant of unusual design has recently been announced by Le Roi Company of Milwaukee, Wisconsin.

This new plant is powered by a 4-cylinder, 133 cubic inch Le Roi engine equipped to burn either gasoline or natural gas and running at the very conservative speed of 1200 r.p.m. Two types of generators are available, either a 5-kw., 110-volt, DC, or a 5-kva. 110-volt, single-phase, 60-cycle, AC. Both are two-bearing, ball-bearing, splash-proof machines.

An illuminated instrument panel is built into a ventilated weatherproof cabinet in the rear of the housing. This panel is fitted with ammeter and voltmeter, automatic circuit breaker and field rheostat. The weatherproof receptacle for the load-carrying cable is conveniently located in a protected position on the side of the unit under

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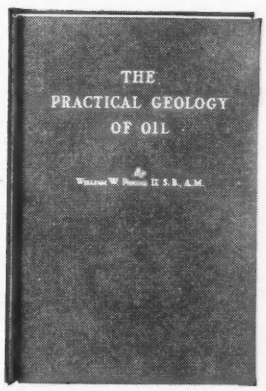

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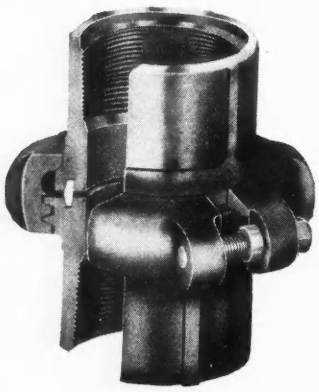

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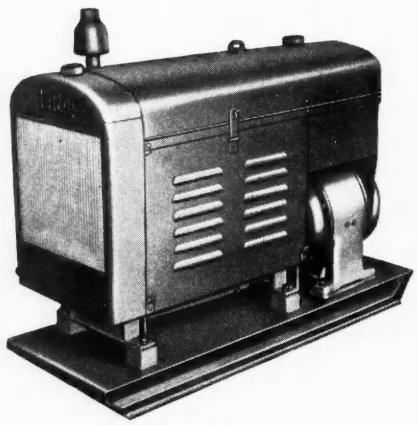


Le Roi Light Plant

the control cabinet. Electric starting equipment for the engine is optional.

The entire unit weighs 1250 pounds and is mounted on a rugged pontoon type steel base with chain holes—front and rear—for easy handling. Bulletin WEG describing this plant may be had by writing Le Roi Company at Milwaukee, Wisconsin, or Tulsa, Oklahoma.

Sperry-Sun Moving D. C. Roberts to Houston

Sperry-Sun Well Surveying Company announces the resignation of R. L. Marston, regional manager in the Gulf Coast territory, who is resuming his former production activities.

Dwight C. Roberts, regional manager of the Pacific Coast territory, will be transferred from Long Beach to Houston, from where he will direct and supervise the activities of both the Gulf Coast territory and the Pacific Coast territory.

Roberts is a graduate of Stanford University (degrees of A.B. in Pre-Mining, and E.M. in Petroleum Engineering) and worked for a number of years as petroleum engineer for the California State Mining Bureau, and later was associated with Neil H. Anderson, California oil umpire, in the capacity of petroleum engineer and consultant. He is also well acquainted with the underground well surveying business through his several years association with the Alexander Anderson organization. He has been with Sperry-Sun Well Surveying Company since the early part of 1937.

Economy Lantern Company Moves General Offices

Economy Electric Lantern Company announces, effective July 1, general offices of the company will be moved from Chicago, to the manufacturing plant at 3100 West Cherry Street, Milwaukee, Wisconsin.

M. O. Johnston Oil Field Service Corporation Wins Court Battle

In one of the few oil tool litigation cases ever to be carried to the United States Supreme Court, the suit of Erle P. Halliburton, et al, vs. M. O. Johnston Oil Field Service Corporation, et al, has been given final decision by the United States Supreme Court in favor of the defendants, M. O. Johnston Oil Field Service Corporation.

The litigation, involving the claims of the Simmons patent, was begun in 1933. It was carried through the courts of two states, both Texas and California, before reaching the Supreme Court of the United States where the position of the Johnston organization (that the claims of the patent were invalid) was upheld.

Worthington Promotes Works Executives

H. C. Ramsey, vice president, in charge of operations of Worthington Pump and Machinery Corporation has announced several promotions to key positions in the corporation's Harrison and Holyoke works' staffs.

L. C. Ricketts, a member of the Worthington organization for the past 10 years, and recently general superindent of the corporation's Harrison works, has been appointed manager of that works. W. D. Sizer, who joined Worthington in 1920, is appointed executive engineer in charge of all engineering activities at Harrison. B. R. McBath now assumes full responsibility as engineer in charge of the centrifugal engineering division, succeeding W. D. Sizer.

J. H. Brautigam succeeds W. H. Scherer as manager of the corporation's Holyoke works. This appointment returns Brautigam to Holyoke at which point he joined the organization in 1928, leaving there to assume his duties as assistant works manager of the Harrison plant in 1932. W. H. Scherer will devote his entire time to the further development of manufacturing methods in all of the corporation's plants, as assistant to H. C. Ramsey with headquarters at Harrison.

REGISTERED PROFESSIONAL ENGINEERS
GAS AIR WATER
REPRESSURING
INSTALLATION OPERATION
PETROLEUM ENGINEER
JO H CABLE
WICHITA FALLS TEXAS
GAS MEASUREMENT PERMEABILITY
COMPRESSOR PLANTS POROSITY
BOTTOM HOLE PRESSURE SATURATION
GAS OIL RATIOS RECOVERABLE OIL
CONTROL OF FLOW THRU FORMATION
REGISTERED PROFESSIONAL ENGINEERS

NOTES FOR THE Equipment Buyer and User

Allsteel Products Manufacturing Company Changes Name

The Allsteel Products Manufacturing Company, Wichita, Kansas, whose trademark has been "Cardwell Allsteel" has found it necessary to change its name to Cardwell Manufacturing Company, Inc., on account of customers requesting the change due to difficulty and confusion in filing, according to a company announcement.

There is no change in the organization except the name.

D. B. Curll, Jr., Joins Rumford Chemical Works

Albert E. Marshall, president of Rumford Chemical Works, announces appointment of Daniel B. Curll, Jr. as assistant to the president. For the past 9 years Curll has been associated with Philadelphia Quartz Company as chemist in charge of semi-works development and as technical adviser to both the manufacturing and purchasing departments. He also served as a director and member of the executive committee of American Doucil Company.

Curll's work with Rumford Chemical Works will be especially with commercial development of sodium tetraphosphate—a new chemical product which has just been put on the market.

Thornhill Completes Extended Trip to South America

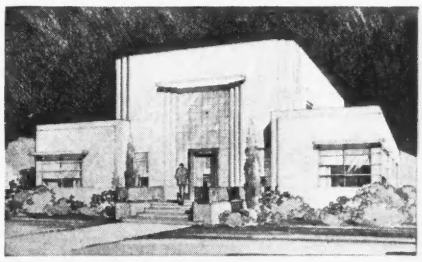
C. W. Thornhill, vice president of Thornhill-Craver Company of Houston, has just completed a 22,000-mile air trip through South America. The trip, which required 3½ months, was made to survey South American operations as to their present and probable future importance as a market for American-made oil-field equipment. Mr. and Mrs. Thornhill reported courteous and hospitable treatment in every country.

Vapor Recovery Systems Company Building New Office and Plant

Vapor Recovery Systems Company is building a new office at its present location, 2820 North Alameda Street, Compton, California.

Plans were prepared by William E. Mayer for a modernistic structure two stories high, with a floor space of approximately 4000 square feet. This will be divided into private offices, display room, reception room, large general office, engineering department and an art and advertising section. Two large fireproof vaults will preserve valuable drawings and documents.

Modern equipment will include intercommunicating systems and air conditioning. Estimated cost of the building and equipment is $30,000.



New Plant of Vapor Recovery Systems Company.

Guiberson Corporation Engineer Completes Trip

A. Pranger, chief engineer of The Guiberson Corporation, has just returned to his office in Dallas, following a trip through the Rocky Mountain states during which he made a survey of general conditions in the Colorado, Wyoming and Montana oil fields.

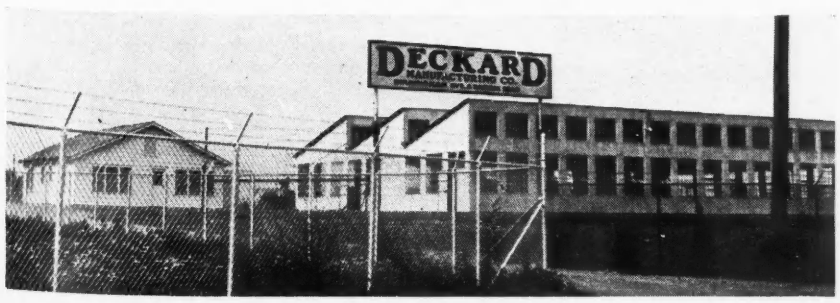
Subsurface Map of Gulf Coast Available

A subsurface map covering the Gulf Coast of Texas, Louisiana, and Mississippi is now available, from Roper & Todd, Sterling Building, Houston.

The Texas map extends from Victoria County to the Sabine River, and covers from the coastline inland for about 100 miles. The Coastal Belt is contoured on the Heterostegina, and the Sparta Wilcox Trend is contoured on the Hockleyensis.

The Louisiana-Mississippi map extends from the Sabine River to Mobile, Alabama, and from the Gulf north to Township 10 North. The Coastal Trend is contoured on the Heterostegina, and the Sparta Wilcox Trend is contoured on the Noninella Cockfieldensis.

These maps show the locations of all



Deckard Manufacturing Company, Tulsa, is now located in its newly constructed office and plant, Birmingham and Dawson Road. The firm established original headquarters at 804 E. First Place, Tulsa, in June, 1929.

CASING HEADS
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There is a Brewster Head for every casing or collar size and any pressure up to 10,000 pounds. Many are provided with a special feature that permits re-packing under pressure. All studs are heat-treated. Let us have your requirements and we will gladly quote prices and send you a catalog.

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dry holes, give outlines of producing fields, and include all paleontology that is available. The maps have been in preparation for over a year, and embody all of the data which the geological firm of Roper & Todd have been accumulating for a number of years.

Casing Handbook

A. O. Smith Corporation, Milwaukee, Wisconsin, has prepared a handbook, No. 535, on "Smith Casing." The 55-page handbook, which is a complete discourse on the design and utility of oil-well casing, includes chapters on Elements of Casing Calculations, Collapse Tests, Efficiency of Steel in Casing, and allied subjects. Strength curves, tables, and charts complete the technical description.

LETTERS

Dear Sir:

I am not renewing my subscription to THE OIL WEEKLY because I detest your editorial policies. You continually harp on excess finished products and pipe down on declines in raw products. Your constant premonition of disaster; your constant reiteration of the fear that the price would have to be cut, may do a service to those who control the price fixing of the oil market; but it certainly does not leave the small group of independent producers anything to be thankful for.

I cannot believe that even the most rapacious larger producers would require or expect such parasitical palaver as you have been putting out for the past year or more.

You finally succeeded in breaking down the price structure for crude oil production in the face of the fact that the most drastic sort of proration was lived up to rigidly by the producers. The facts simply are, that the market is far stronger than it has been in several years, and the weakness in the price structure of gasoline production is almost entirely due to the failure of certain producers to undertake some reasonable control of competition between their selling agencies; just as they are apparently able to take practically almost absolute control of production prices.

The sale of gasoline products seems to be a battle royal among the 90 percent or more large producers, especially since so many have adopted the so-called Iowa plan, divorcing themselves from their sales outlets, and if so why should the producers be the scape goats?

H. H. PATTERSON
H. H. Patterson Oil Company,
Atmore, Alabama.

By the thousands, within the past year, other men engaged in the producing and pipe line divisions of the oil industry have been renewing their subscriptions, because they have considered our editorial material desirable.

If we had worn rose-colored glasses since the middle of 1937 and continuously chanted that all was well, even when the gasoline market was on a long and steady decline and when the crude oil markets finally were pulled down last fall by the depressed gasoline markets, then we probably would have been by now without an audience.

Like the conscientious and seasoned umpire who calls the plays as he sees them, we honestly analyze developments as they appear to us, in the light of a great many years of watching causes and effects in the oil industry.

Furthermore, there is not any evidence that we have made any important errors of judgment "for the past year or more."

That gasoline stocks were excessive during 1938 and the first quarter of 1939 was attested by the greatly depressed markets for gasoline and resultant poor earnings for all branches of the industry in that protracted period. (To charge that the low prices were deliberately achieved or permitted by cunning or indifference of large operators is to paint a picture of price fixing in reverse.)

Similarly, improvement of the gasoline inventory situation in the past several months, made possible by unusually good demand, and duly recorded in the columns of this publication, has brought betterment of the gasoline market and a resultant bolstering of the crude oil markets.

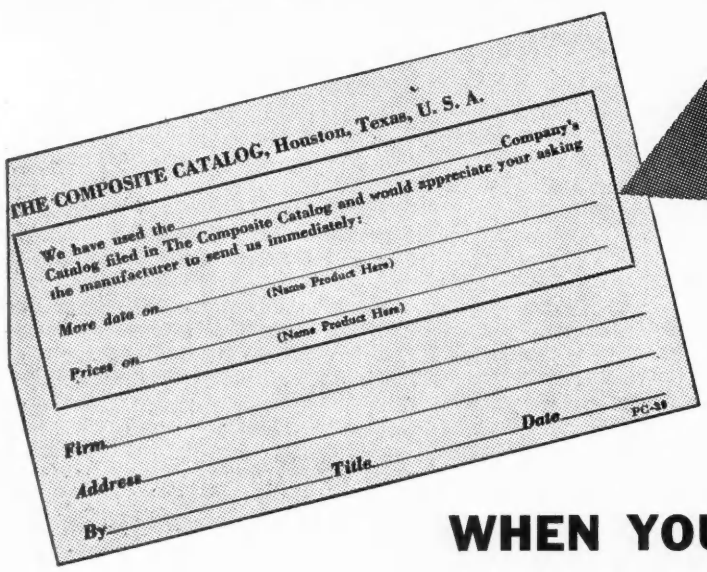
It may be that some of our analyses of developments and trends may have been conducive to improvement of the gasoline situation, which in turn naturally has bolstered the crude oil markets.

In such event, we have benefited both the refiner and the producer, whether operating a few or numerous plants or wells, and thereby have fulfilled an obligation to our readers and their industry.

Compressors

Worthington Pump and Machinery Company, Harrison, New Jersey, has released Bulletin L-611-B8 on single-cylinder single-stage motor- and steam-driven compressors in sizes from 5 to 125 horsepower for compression up to 150 pounds.

. . . use these Convenient Cards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More data on (Name Product Here)
Prices on (Name Product Here)
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Address
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PC-38

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If you fail to find all the data you need on any piece of equipment, whether described in The Composite Catalog or not described therein, just fill out a blue card and drop it in the mail. The data requested will be sent promptly.

THE COMPOSITE CATALOG
OF OIL FIELD AND PIPE LINE EQUIPMENT

Squeaks from the Bull Wheel

Grim Visage

"There's a man outside, Sir, that wants to see you about a bill you owe him. He wouldn't give his name."

"What does he look like?"

"He looks like you'd better pay it."

Slightly Lumpy Effect

"And now, Nora, are you efficient?"

"Indade I am that, mum. In me last place ivery mornin' I got up at four, made me fires, put me kettle on to bile, prepared the breakfast, an' made up all the beds before anyone was up in the house."

Co-operation

A well-dressed man stood for several minutes watching a brawny expressman tugging at a heavily laden box almost as wide as the doorway through which he was trying to move it, presently the onlooker approached and asked:

"May I be of assistance?"

"Thanks, you can," the other replied, and for the next five minutes the two men, on opposite sides of the box, worked, lifted, puffed, and struggled, but the object of their attentions did not move an inch.

Finally the well-dressed man straightened up and said between puffs: "I don't believe — we can — ever get — it out."

"Get it out?" the expressman shouted. "Why, why—I'm trying to get it in!"

Deceit

My husband is a deceitful fellow; sometimes I almost lose patience with him.

What's he done now?

Last night he pretended to believe me when I could see very well that he knew I was fibbing.

Honeymoon

"Did you go on a honeymoon, Suzabelle?"

"Ah guess you might call it dat, Ma'am. Henry done help me wid washing de fust week."

There Was a Hitch

"Is your married life a happy one?"

"Yes, I married the woman of my dreams. She is as beautiful to me as the day I met her. Her hands are always white and soft. Her hair is never untidy, and her dresses are always the latest."

"So you don't regret it?"

"No, but I'm getting pretty tired of eating in restaurants."

Utility

"Do you think that the radio will ever take the place of newspapers?"

"No, not entirely; you can't swat flies with a radio."

Gone But Not Forgotten

"I suppose you carry a memento of some sort in that locket?"

"Yes, a lock of my husband's hair."

"But your husband is alive."

"Sure; but his hair is gone."

Beau Brummel of the Tribe

"I don't like the looks of that haddock."

"Lady, if it's looks you're after why don't you buy a gold fish?"

For the Taxi

"Have you seen the new people next door yet?"

"I saw the woman on the doorsteps this morning. She says her husband is a taxidermist."

"A taxidermist? Then I can't understand them taking that house, because there's no garage attached to it."

Easily Identified

A city boy was out to take an inventory of a farm. He hadn't any experience in this type of work, but he managed to make a full list of all the chattels and stock until he came to an animal which he was unable to identify—a goat.

So he 'phoned his boss, and said: "What do you call this thing that's around here with a rough coat that's worn out in spits, a white beard, and a long sad face?"

To which has boss replied:

"That, you fool, is the farmer.'

You Said It, Neville

Herr Hitler and Signor Mussolini sat fishing together on one side of the lake, and Mr. Chamberlain on the other. But while the British Minister caught fish after fish, the two dictators could not even raise a bite.

"How do you do it, Neville?" they shouted across the water. "There don't seem to be any fish on our side."

"The fish are there, all right," replied Mr. Chamberlain, "but they daren't open their mouths."

Hm-m

"How do you like this dress I got for my eighteenth birthday?"

"Hm-m, it certainly has worn well."

Too Much Territory

"Marry me, darling, and I'll make you the happiest wife in forty-eight states."

"Not me. I don't care to live in a trailer."

Too Late to Turn Back

"You say the elopement was sort of forced on you?"

"Yes. After she came down the rope ladder, her dad pulled it up."

One on the Judge

I'll let you off this time, but from now on keep away from bad company.

Thanks, Judge; you'll never see me here again.

Let's Syncopate

The doctor told the man that he was drinking too much for his own good.

"Well," he replied, "what am I to tell my wife is the matter with me?"

"It will satisfy her to tell her you are suffering from syncopation."

That was O.K. until she looked it up in the dictionary. This is what she found: "Irregular movement from bar to bar."

Experience!

"Your mistress tells me, Jane, that you wish to leave us to become an attendant at a mental hospital?"

"That's right, sir."

"What experience have you had?"

"Well, sir, I've been here for three years!"

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& COOLERS
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1. Larkin Seamless Bull Plugs are pressed from NEW flat strip steel, cupped and drawn into plugs which have neither seams nor welds at side or end.
2. Larkin Seamless Swaged Nipples are forged from NEW Seamless full-weight pipe or casing.
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5. Sufficient length to allow ample room for pipe tongs.
6. Label shows plainly the size and thread, for convenience of field men and warehouse men.

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LARKIN PACKER COMPANY, INC., ST. LOUIS, U.S.A.

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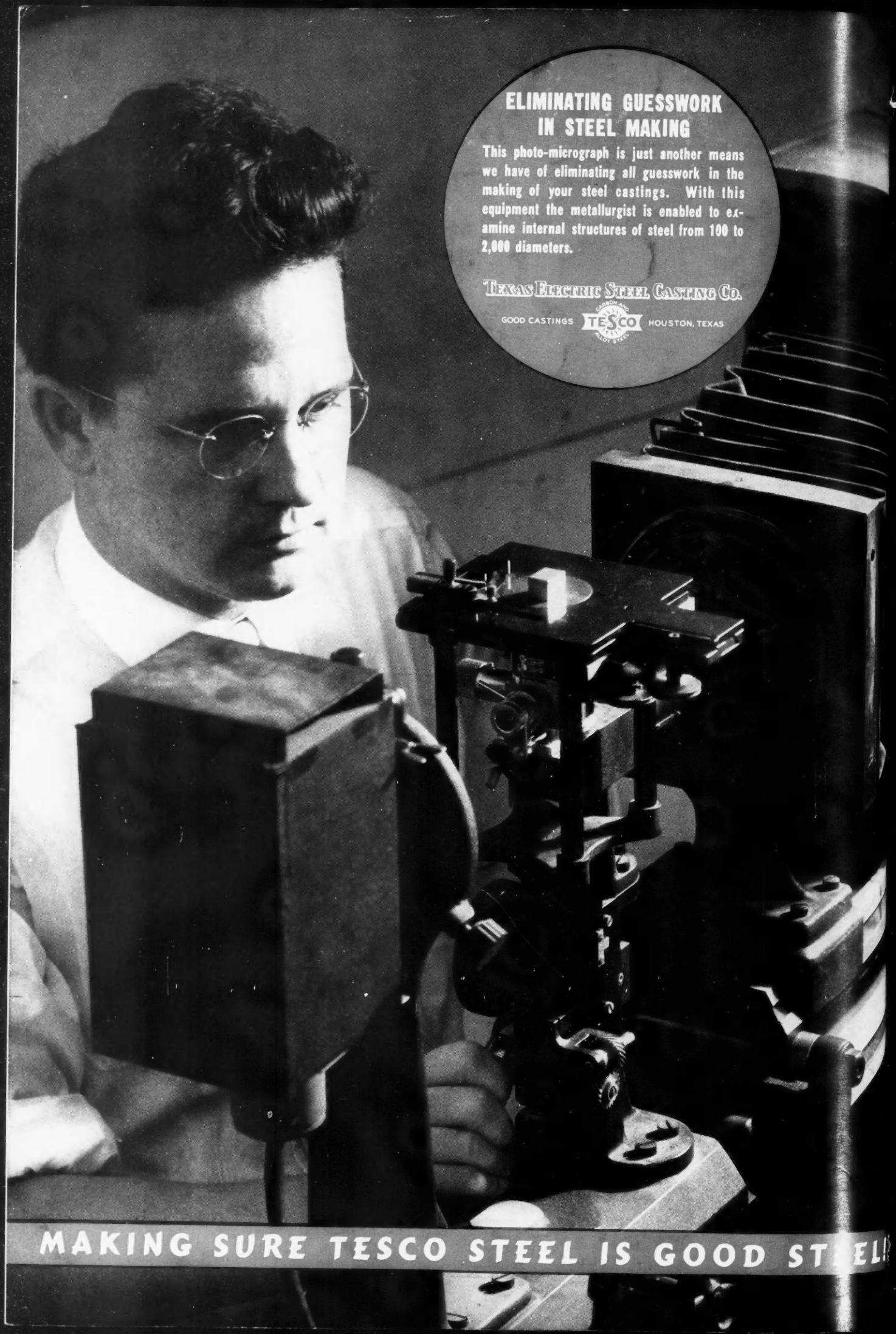
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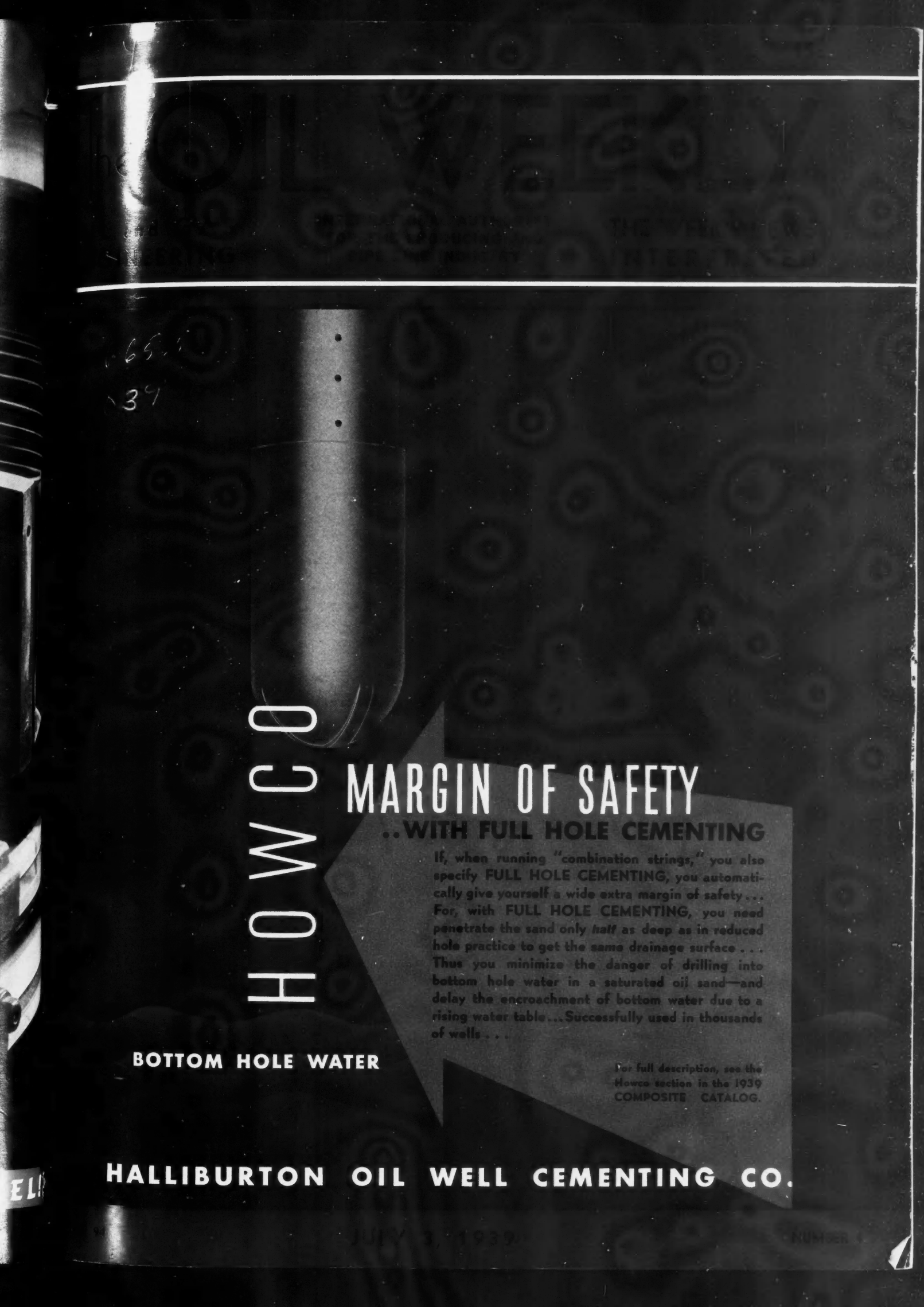
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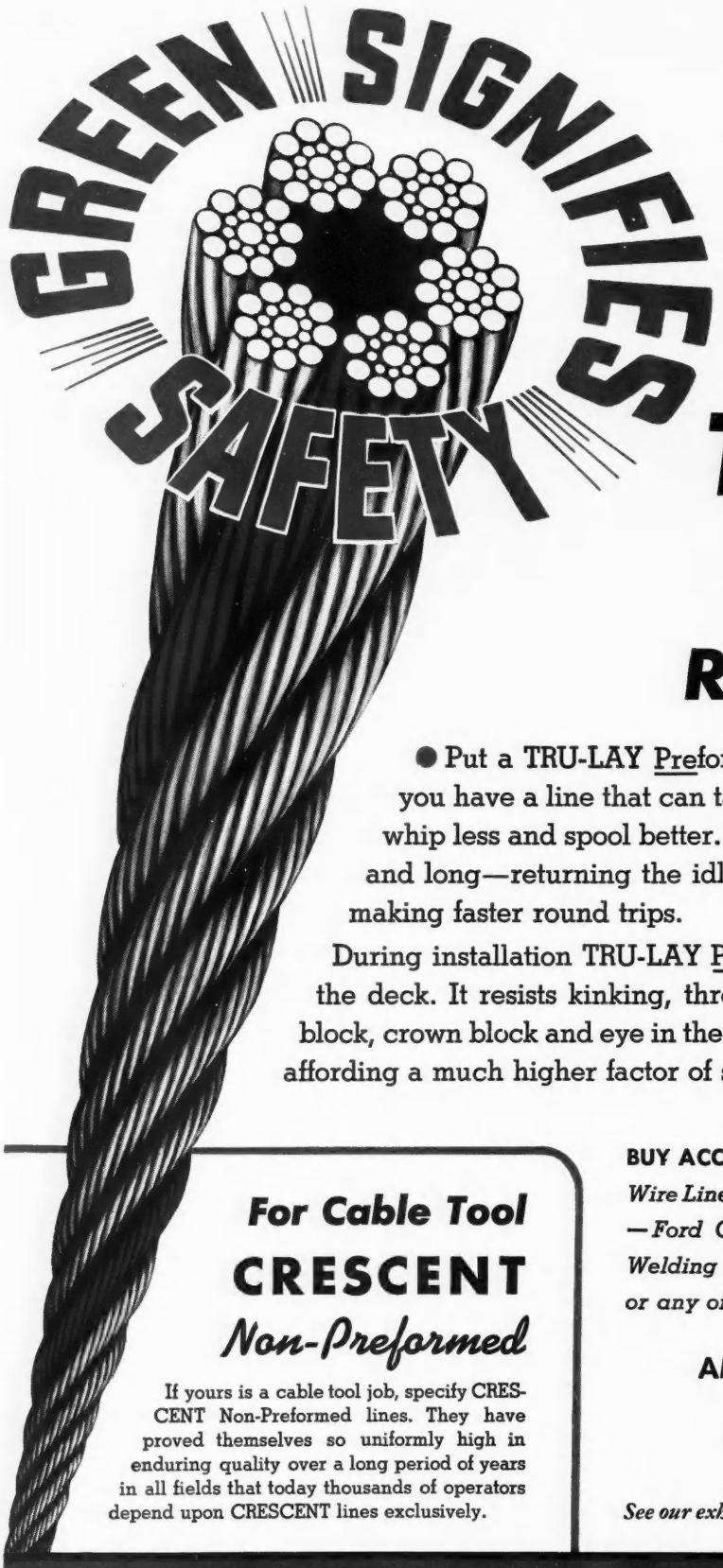

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ROTARY LINES

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in Drilling or Producing Wells
Where Casing is in the Hole

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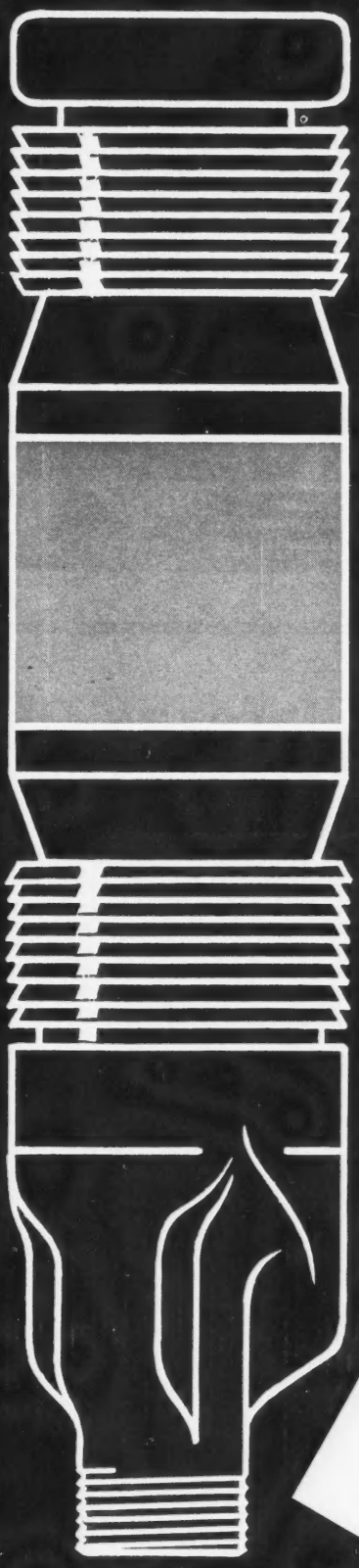

All of the applications for the Baker Cement Retainer are illustrated and described in detail in the Baker Broadcast No. 17-A, a comprehensive 40-page treatise gladly sent upon request. Complete information will also be found in the Baker Section of your Composite Catalog.

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Full range of sizes available in Black or Galvanized finish.

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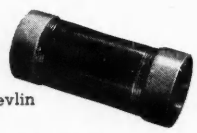

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LOOKING AHEAD

WITH THE EDITOR

East Texas' Future Production Presents Complex Problem.

FIFTY-EIGHT hundred wells actually dependent upon pumping to make their daily production, an additional 600 on gas lift, 2000 more wells just barely in the flowing stage, and 17,500 others in line for some sort of artificial lifting equipment at some future date. That is East Texas field today. With anywhere from 1,630,000,000 to 2,630,000,000 barrels of oil yet to be recovered, the field not only will continue to be a major source of crude oil but also a highly concentrated market for pumping equipment for years.

Selection of pumping equipment for initial installation and for changed production characteristics of individual wells is one of the major problems of the production man in East Texas. Whether to install a light unit first and a heavier one later, or a heavy unit first and a lighter one later still is an enigma to many of the operators. But these and other problems are being solved in certain sectors of the field.

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Article No. 13 of THE OIL WEEKLY'S special Pumping Series, which will be published in an early issue, discusses pumping practices in various parts of the field and tells what may be expected of certain production characteristics of the reservoir in the future. It is accompanied by a table telling chronologically the relation between bottom-hole pressure and production.

The OIL WEEKLY, Published every Monday. Entered as second-class mail matter December 23, 1916, at the post office at Houston, Texas, under act of March 3, 1879.

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